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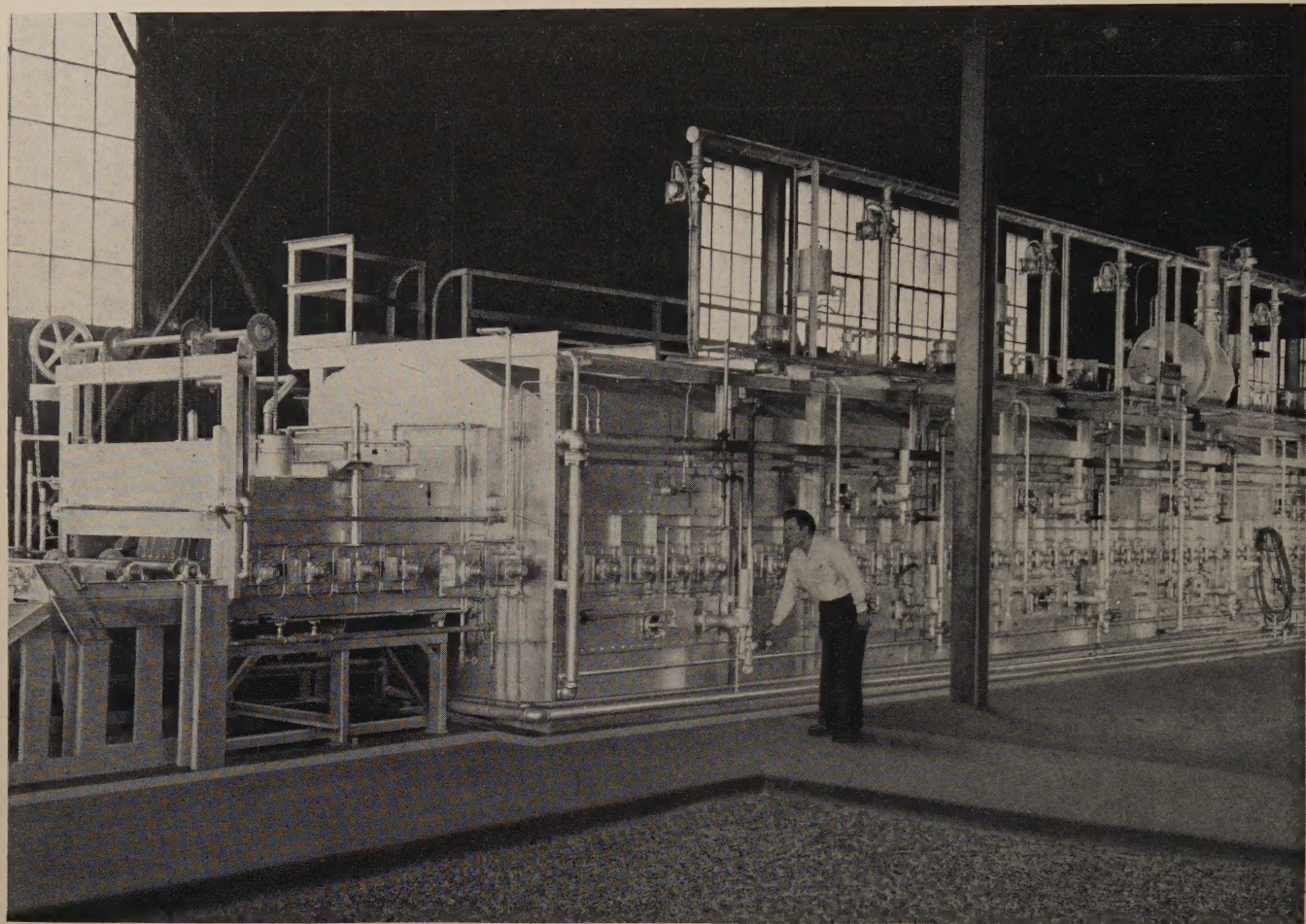


Facade for the 1959 Chicago International Trade Fair
See pages 3 and 16

Precision Instruments: A Key to World Power

A Blueprint for Executive Training

GAS AT WORK for Chicago's Industry



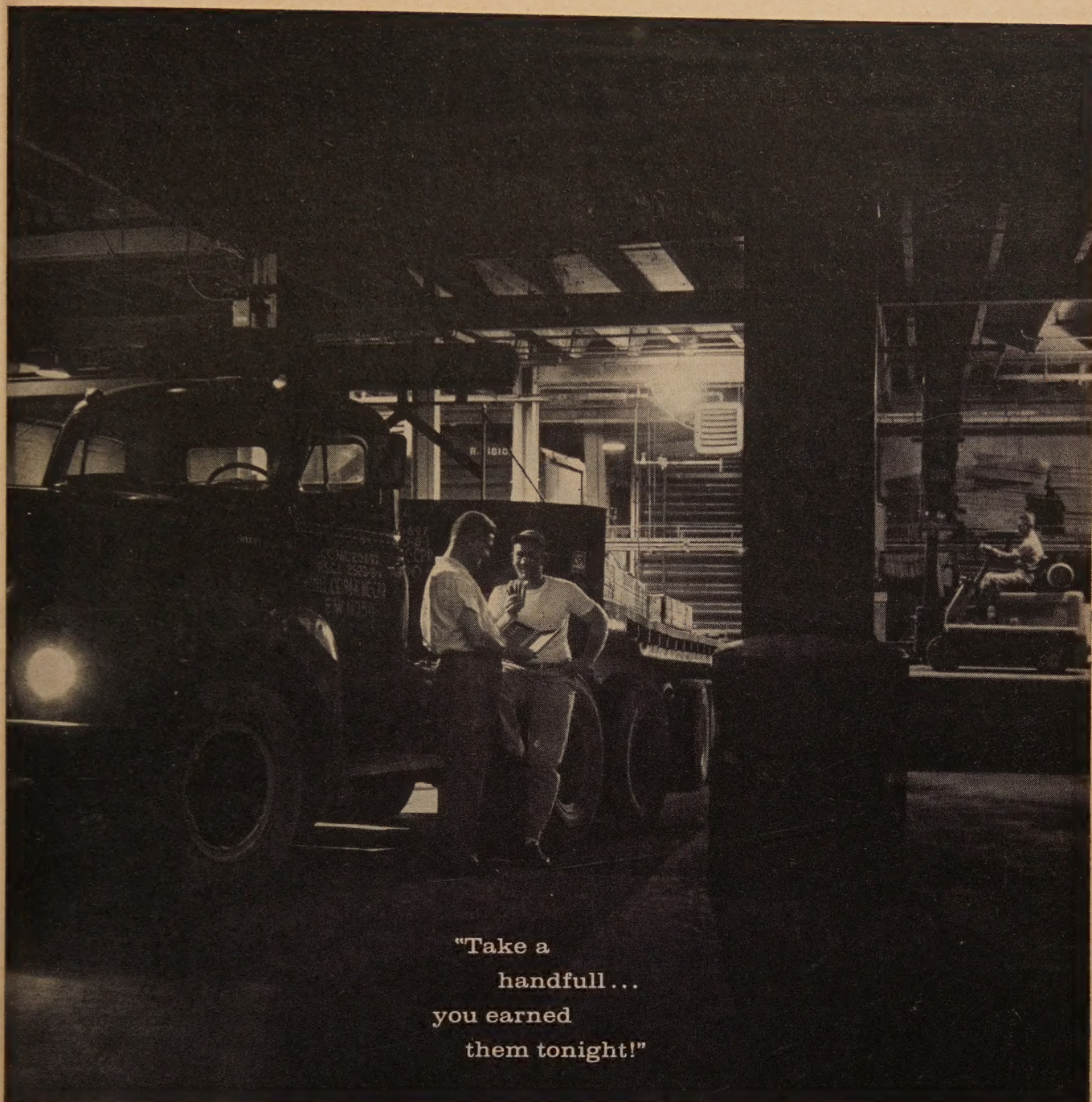
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COMMERCE

Magazine

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Our Cover

The big show—the 1959 Chicago International Trade Fair — will be staged next year from July 2 through July 18 along the two-mile exhibit way of a refurbished Navy Pier. Our cover shows the 30,000 square foot facade planned for the front of Navy Pier. It will consist of brilliant panels of red, blue, and yellow, mounted on stark white scaffolding. The entrance ramp to the Pier will fly the flags of all participating nations.

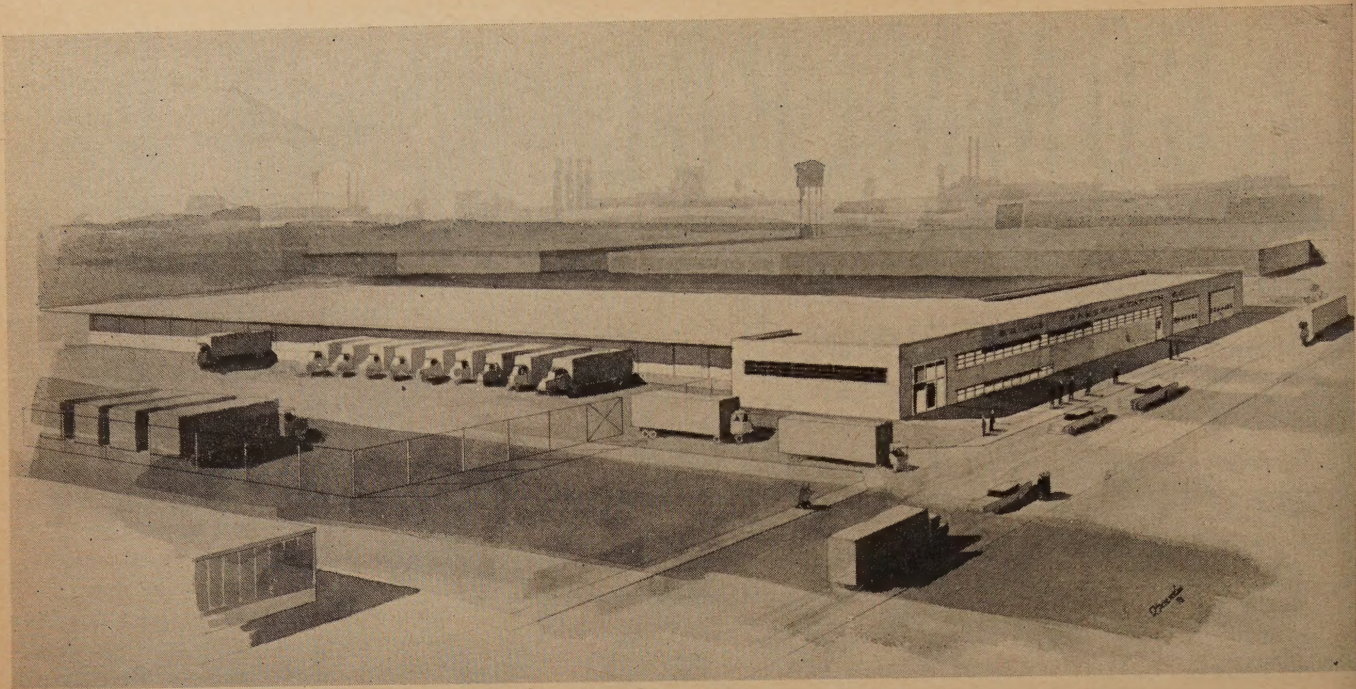
And from the advance interest shown in the coming Fair, it looks like nations from every corner of the earth will be represented. Even at this early date, almost 50 per cent of the available exhibit space has been contracted for. In one category — foreign made automobiles — limitations had to be set for the display lest the Fair become just a big auto show. Even with the limitations, this one section will amount to one of the largest showings of foreign automobiles ever held in this country and will be the first such exhibit for Chicagoland. But this is only one aspect of the Fair, for further details see the story written by Tom Buck starting on page 16.

* * *

in this issue . . .

If you haven't discovered the expanded statistics section which started in COMMERCE last month, do so this month. It is on pages 5 and 7. This month five new series have been added to the list of business indicators making a total of over seventy indexes to assist business men in making decisions and following trends in the Chicago area. Additions are new passenger car sales, business and residential main telephones in service, barge line freight originated in the Chicago commercial zone, and the square footage of vacant industrial buildings.

In other features this month; a leading educator looks at the bond between business and education (p. 13) and discusses executive training; a visit is made to the U. S. National Bureau of Standards (p. 15) for an up-to-date report on where we stand with Russia in the precision instrument race; the story of Chicago's fastest growing businesses (p. 20) is unfolded.



Rendering of Terminal under construction for Briggs Transportation Company

MODERN PLANTS IN MODERN DISTRICTS...

Clearing Industrial District, Inc. always owns neighborhoods rather than individual sites. It gives this industrial location firm the necessary control toward developing a modern industrial district that will stay modern and streamlined. There is never the penalty incurred in picking a site among mixed occupancies.

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FIRST NATIONAL BANK BUILDING

CHICAGO 3, ILLINOIS

Statistical profile of . . .

Chicago Metropolitan Area Business

AN analysis of July indicators reveals business activity sustained June's accelerated pace. Some series moved upward, others declined, giving a net effect of maintaining approximately the same level of activity.

The index of industrial produc-

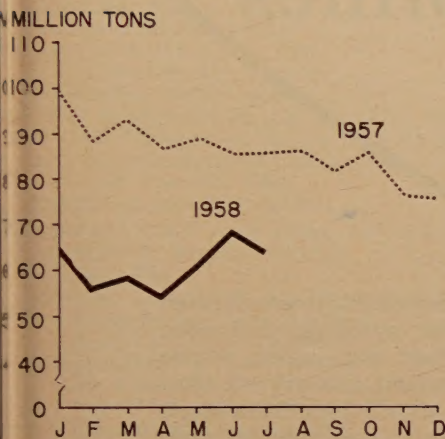
tion in July held at about the June level. From May to June the index increased by 5 points to 110.4. Steel production slid downward in July—about 6½ per cent below the June level, but remained above any other month this year. Electric power production hit a high for this year in July, but meat production and industrial gas consumed lost some ground.

Department store sales for July were considerably above the June figure—by almost 10 per cent on a seasonally adjusted basis, and about two per cent above July of last year. Bank debits, reflecting checkbook spending in July, lagged behind the June figures, but were still considerably above the April and May totals. Time deposits in commercial banks continued a steady rise which began about October of last year, and savings receipts for savings and loan associations were up 30 per cent from the June

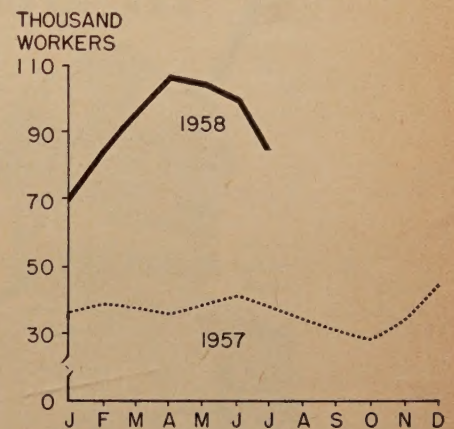
figure and 15 per cent above July of last year. Loans outstanding moved downward from the June figure. Stock market activity, as represented by shares traded on the Midwest Stock Exchange, peaked upward during July, topping all

(Continued on page 7)

STEEL PRODUCTION



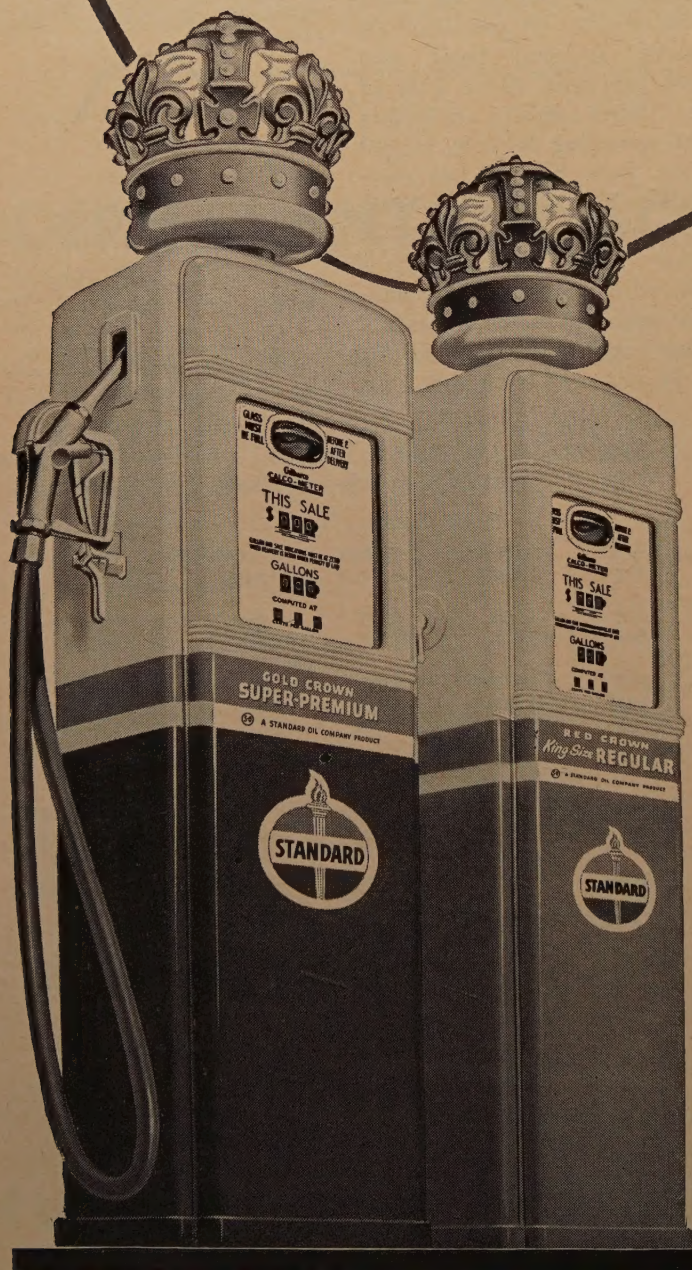
INSURED UNEMPLOYMENT
Cook and Du Page Counties



	July	1958 June	May	July	June	1957	Yearly	1956
POPULATION AND GENERAL GROWTH								
TRENDS:								
Population—Chicago (000) Estimated	3,771.0	3,768.9	3,767.0	3,748.3	3,746.3	(1/1)	3,734.6	(1/1) 3,711.0
—Metr. Area (000) Estimated	6,500.0	6,488.0	6,476.5	6,359.9	6,348.0	(1/1)	6,278.6	(1/1) 6,138.7
Recorded Births:								
—Chicago	8,335	7,586	7,960	8,897	8,282	T	98,260	92,835
—Metr. Area (5 Ill. Counties)	12,895	12,007	12,274	13,555	12,628	T	150,196	141,986
Recorded Deaths:								
—Chicago	2,963	3,089	3,175	3,207	3,214	T	40,433	38,427
—Metr. Area (5 Ill. Counties)	4,617	4,686	4,799	4,687	4,723	T	59,567	56,291
Marriage Licenses (Cook County)	3,396	4,622	4,006	3,409	5,216	T	42,697	44,424
Total Water Pumpage:								
—Chicago Water (000,000 Gal.)	33,474	30,145	32,015	35,938	32,135	T	373,050	377,539
No. of Main Telephones in Service (000):								
—Business Telephones	307.7	307.7	307.1	302.6	302.4	Ye	305.1	297.3
—Residential Telephones	1,596.8	1,593.6	1,591.6	1,559.5	1,557.1	Ye	1,582.5	1,535.3
INDUSTRY:								
Index of Indust. Production (1947-49=100)	110.0 (p)	110.4	105.5	132.0	130.2	A	129.5	135.3
Steel Production (000 Tons)	1,294.3	1,384.0	1,213.1	1,716.3	1,706.0	T	20,733	20,726
Petroleum Refining (Jan. 1957=100)		94.0	94.5	86.7	92.6	A	93.5	NA
Indust. Gas Consumed—Chgo. (000 Therms)	12,073	13,464	13,339	13,053	14,258	T	186,224	186,447
Electric Power Prod. (000,000 K.W.H.)	1,683	1,588	1,587	1,690	1,607	T	20,196	19,327
Dressed Meat Under Fed. Insp. (1953=100)	78.2	85.4	78.8	83.2	86.3	A	90.2	93.1
TRADE:								
Dept. Store Indexes (1947-49=100)								
—Sales, Unadjusted	97	112	121	95	120	A	120	118
—Sales, Seas. Adjusted	124	113	119	122	122	A	120	118
—Inventories, Unadjusted		128	134	131	134	A	140	131
—Inventories, Seas. Adjusted		132	129	139	138	A	140	131
Retailer's Occupation Tax Collections (Municipal Tax Excluded) (000)								
—Chicago Metr. Area (5 Ill. Counties)		\$ 15,621	\$ 16,733	\$ 15,801	\$ 15,792	T	\$ 193,349	\$ 183,393
—Chicago		\$ 9,870	\$ 11,031	\$ 10,295	\$ 10,380	T	\$ 127,102	\$ 124,130
Consumer Price Index (1947-49=100)								
All Items—Chicago	127.6	127.5	127.0	124.1	122.9	A	123.3	119.5
New Passenger Car Sales		18,306	19,600	22,994	21,179	T	266,546	268,497

T=Annual Total. A=Average (usually monthly). Ye=Year End. P=Preliminary. N.A.=Not available.

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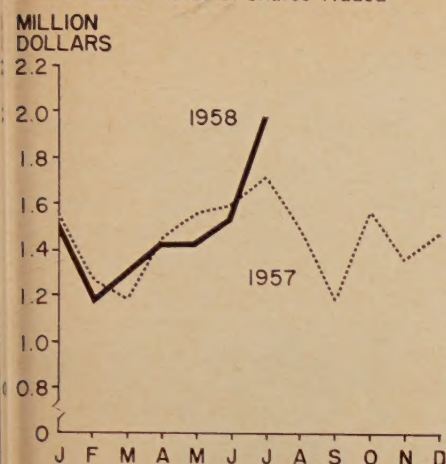
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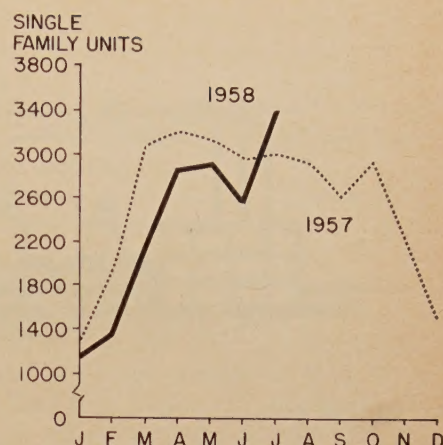
MIDWEST STOCK EXCHANGE
Market Value of Shares Traded



previous monthly figures back through 1957.

Insured unemployment figures for Cook and DuPage counties showed a steady decline for the past four months. The number of permits issued in July for residential construction reveal a sharp gain in the home building industry. It was the first time this year that any month showed a gain over the like month of last year. Industrial plant investments in July of nearly \$46 million is the highest July figure for the past 10 years, except for 1950 when \$49 million was reported.

PERMITS ISSUED
Residential Construction



EMPLOYMENT AND PAYROLLS:

UNEMPLOYMENT AND PAYROLLS.									
Non-Agric. Wage and Salary Workers—									
Number (000)		2,458.1	2,454.8	2,617.2	2,628.8	A	2,626.6	2,623.0	
—Manufacturing (000)		879.9	879.0	1,007.3	1,016.2	A	1,016.6	1,028.9	
—Non-Manufacturing (000)		1,578.2	1,575.8	1,609.9	1,612.6	A	1,610.0	1,594.1	
—Average Weekly Earnings		\$ 93.78	\$ 91.63	\$ 92.24	\$ 93.07	A \$	92.78	\$ 90.04	
—Average Weekly Hours		39.2	38.5	40.0	40.5	A	40.3	41.0	
Total Unemployment (Est. Mid Mo.) (000)	250	240	235	90	90	A	89	69	
(Cook, DuPage Cos., Ill. and Lake Co., Ind.)									

Insured Unemployment Cook and DuPage Counties (000)	84.3	99.3	103.9	39.5	42.5	A	36.9	31.3
Families on Relief (Cook Co.)	27,545	27,634	27,556	21,613	21,952	T	271,459	280,636

CONSTRUCTION AND REAL ESTATE:

All Building Permits—Chicago	2,842	2,733	2,860	2,949	3,023	T	27,298	27,191
—Cost (000)	\$ 21,486	\$152,270	\$ 17,254	\$ 31,233	\$ 30,603	T \$	328,362	\$ 318,920
Dwelling Units Auth. by Bldg. Permits	3,958	3,990	3,519		4,349	T	39,578	48,632
—Single Family Units (Number)	3,407	2,579	2,910	3,019	2,980	T	30,884	39,919
—Apartment Units (Number)	551	1,411	609	341	1,369	T	8,694	8,713
Construction Contracts Awarded								
—All Contracts (000)		\$122,487	\$151,967	NA	178,402		NA	NA
—Non-Residential Contracts (000)		\$ 30,022	\$ 65,893	NA	70,792		NA	NA
—Commercial Contracts (000)		\$ 8,382	\$ 9,632	NA	\$ 23,000		NA	NA
Industrial Plant Investment (000)	\$ 45,817	\$ 6,293	\$ 22,676	\$ 21,718	\$ 13,125	T \$	251,414	\$ 562,479
Construction Cost Index (1913=100)	628	628	620	624	616	A	614	595
Structures Demolished—City of Chicago	76	131	80	68	37	T	755	484
Real Estate Transfers—Cook County	6,569	5,187	4,515	7,539	6,555	T	80,900	98,404
—Stated Consideration (000)	\$ 6,384	\$ 3,684	\$ 3,156	\$ 7,680	\$ 5,199	T	65,208	\$ 74,402
Vacant Industrial Bldgs.—Chgo. (000 sq. ft.)	14,783	14,329	13,931	NA	NA	A	15,148	14,119

FINANCE:

Fed. Res. Member Banks in Chicago								
—Demand Deposits (000,000)	\$ 4,357	\$ 4,475	\$ 4,302	\$ 4,233	\$ 4,373	Ye \$	4,459	\$ 4,480
—Time Deposits (000,000)	\$ 1,813	\$ 1,811	\$ 1,795	\$ 1,696	\$ 1,695	Ye \$	1,733	\$ 1,684
—Loans Outstanding (000,000)	\$ 3,659	\$ 3,897	\$ 3,701	\$ 4,220	\$ 4,209	Ye \$	4,153	\$ 4,055
—Commercial and Industrial								
Loans (000,000)	\$ 2,646	\$ 2,736	\$ 2,679	\$ 3,092	\$ 3,118	Ye \$	3,008	\$ 2,886
Bank Debits—Daily Average (000)	\$636,152	\$689,237	\$607,463	\$656,360	\$657,473	A	\$ 646,509	\$ 599,256
Chicago Bank Clearings (000,000)	\$ 4,935	\$ 5,137	\$ 4,785	\$ 5,164	\$ 4,857	T \$	59,054	\$ 57,473
Insured Sav. & Loan Assoc.—Cook County								
—Savings Receipts (000,000)	\$ 157.5	\$ 121.1	\$ 96.6	\$ 137.4	\$ 105.2	T \$	1,203.3	\$ 1,164.4
—Withdrawals (000,000)	\$ 130.8	\$ 62.0	\$ 61.8	\$ 137.2	\$ 61.1	T \$	894.0	\$ 814.4
—Mortgage Loans Originated (000,000)	\$ 87.3	\$ 85.7	\$ 76.8	\$ 68.6	\$ 66.9	T \$	718.5	\$ 762.3
Business Failures—Chicago	26	30	41	18	25	T	291	271
—Total Liabilities (000)	\$ 1,332	\$ 2,199	\$ 1,199	\$ 1,305	\$ 1,107	T \$	16,759	\$ 21,898
Midwest Stock Exchange Transactions:								
—No. of Shares Traded (000)	2,613	2,104	2,182	2,352	2,184	T	25,484	25,644
—Market Value (000)	\$ 98,670	\$ 76,722	\$ 70,987	\$ 86,872	\$ 78,837	T \$	864,752	\$ 964,219

TRANSPORTATION:

L.C.L. Merchandise Cars Loaded	9,898	10,024	10,332	14,180	13,143	T	168,185	207,365
Express Shipments: Rail	664,005	681,316	714,092	Strike	Strike	T	7,244,646	11,311,157
Air	65,423	67,696	65,478	Strike	Strike	T	605,718	918,769
Natural Gas Dlv'd. by Pipe Line (000,000 Cu. Ft.)	24,365	25,006	25,618	23,516	23,776	T	295,322	292,346
Freight Originated by Common Carrier								
Intercity Trucks—(Jan. 1958=100)	104.3	106.8	106.7	NA	NA		NA	NA
Air Passengers: Arrivals	473,335	493,187	436,611	459,359	501,983	T	5,148,119	4,677,748
Departures	489,403	506,401	442,471	483,014	525,851	T	5,311,915	4,895,887
Chicago Transit Authority Passengers:								
—Surface Division (000)	33,647	34,824	36,754	36,586	40,331	T	469,785	505,623
—Rapid Transit Division (000)	8,713	8,451	8,850	8,830	9,130	T	112,281	115,659
Air Mail Originated (000 Pounds)	1,432	1,434	1,514	1,763	1,833	T	20,098	17,876
Barge Line Freight Originated—Tons	338,962	305,665	327,200	NA	NA		NA	NA

T=Annual Total. A=Average (usually monthly). Ye=Year End. P=Preliminary. N.A.=Not available.



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The Editor's Page

Battle Won, War Still On

The farm legislation finally passed by Congress represents a signal victory for Secretary of Agriculture Ezra Benson. Throughout his six years in the cabinet, he has never stopped fighting to shift the principle of farm assistance from rigid price supports and rigorously controlled production to lower supports and unlimited production. The President has backed the secretary's position with equal adamance, despite the bitter protests of the farm bloc.

Mr. Benson succeeded in getting his policy in effect for only three of the six basic commodities — corn, rice and cotton. Wheat, peanuts and tobacco continue under the old formula so Mr. Benson's war is far from over although he has won a very significant battle. He also is liable to face other problems. Farm experts consider it more than probable that the removal of production controls from corn, cotton and rice will bring an upsurge in production next year, which may at least temporarily cause the total government subsidy to rise, despite lower support prices. This may cause the bickering farm bloc to bury their intramural squabbles and again present a solid front. It might also weaken support for the new approach to the farm problem among consumers and taxpayers.

These are among the major hurdles that lie ahead. Mr. Benson will need all of the support he can muster to overcome them. They must be overcome, however, if agriculture is to be made self-sustaining and the taxpayers are to be relieved of a subsidy burden now exceeding \$5 billion a year.

Three Strikes But Not Out!

The Chicago metropolitan area has again sustained a bitter defeat in its efforts to get a desperately needed increase in the diversion of water from Lake Michigan. This time the battle for a one-year period of experimental diversion of an additional 1,000 feet of water per second failed to pass in the Senate after passing the House. In the two preceding sessions of Congress, diversion bills were passed by both houses only to be vetoed by the President on the grounds that Canada objected.

The gall of this latest defeat is made the more bitter by the fact that Canada had withdrawn its objections and polls indicated a majority of the Senate favored passage of the bill. Because of a threatened filibuster in the final hours of the session, however, the Senate was denied an opportunity to vote.

Discredit for this final maneuver which killed the bill goes to the junior senator from Wisconsin, William Proxmire, who threatened to talk for 24 hours if necessary to keep the measure from reaching a vote. Senator Proxmire was representing the opinion popular in his state and some other lake areas that additional diversion for Chicago would have a number of dire consequences for them. This opinion is based purely on conjecture. No test has ever been made.

Nevertheless, had the bill been pushed more aggressively earlier in the session, it could not have been beaten by the filibuster tactic.

Despite all objections, the Chicago metropolitan area must have more water from Lake Michigan. Public health authorities have declared that the unpurified waste now flowing into the Chicago River and Illinois waterway, which cannot be purified in any way other than by a greater flow of Lake Michigan water, is a threat to the health of more than seven million people. This threat will not diminish. It can only grow as the population in the area increases. Because of these facts, the fight for greater diversion will continue. And in the next session of Congress, representatives and congressmen from Illinois must get action early enough in the session so that no threat of a one-man filibuster can place the welfare of seven million people in jeopardy.

Chicago—New Mecca For Sports Car Racing

Rapidly approaching completion 3½ miles west of the Loop near Elgin is a facility which will add a bright new facet to the Chicago area's entertainment facilities for its own citizens and its attractions for visitors. This facility is the 3.7 mile long Meadowdale Raceways, a sports car tract surpassing any in this country or Europe. Inaugural races, with internationally famous drivers participating, will take place Saturday and Sunday, September 13 and 14.

Carved out of 235 acres of scenic hilly terrain, the course will eventually provide accommodations for more than 150,000 spectators at points around the track where drivers will be called upon to show their greatest skill, speed, or both.

An outstanding feature of the new track is two steeply banked turns fashioned after the famous Monza Wall at Monza, Italy. One of these is banked at 45 degrees, or eight degrees steeper than the 37 degree bank in Italy. To negotiate this turn to maximum advantage, drivers estimate that cars will have to reach speeds of 140 miles per hour. A second feature is a six thousand foot straightaway, the longest in the world. In all, the track offers everything from hairpin turns to extreme grades.

Sports car racing is one of the most rapidly growing sports in this country. At a track such as Meadowdale, with spectator facilities designed to draw whole families for a day's outing, it also promises to become a leading spectator sport.

Leonard W. Besinger, builder and president of the track, envisions Chicago as on its way to becoming the international capital of sports car racing. Every Chicagoan, whether a fan or not, can join with Mr. Besinger in hoping that his vision of another Chicago land first will come true.

Alan Sturdy



Here...There... and Everywhere

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United's "Executive"
flights for-men-only
nonstop to New York
now leave at 5 p.m.
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Both of United's famous
"Executive" flights are timed
to suit your convenience.
For reservations on either of these
popular after-business flights
to La Guardia, call United Air Lines
at FI nancial 6-5700 or an
authorized travel agent.

• **Wage Assignment and Garnishment Procedures**

— A new publication which informs businessmen of the wage assignment and garnishment procedures in Illinois has just been compiled by the Legislation and Taxation Division of the Chicago Association of Commerce and Industry. The 22-page document, entitled "Wage Assignment and Garnishment in Illinois," is a concise, authoritative explanation of the wage attachment laws not available in any other single publication. Copies may be purchased for \$1.00 each through the Legislation and Taxation Division of the CACI.

• **Advertising Seminars**—The 22nd annual series of workshops on advertising, sponsored by the Chicago Federated Advertising club, will open during the week of October 13. There will be eight six-week sessions on the subjects of copywriting, art and layout, production, industrial advertising, marketing and merchandising, TV and radio, direct mail, and public relations and publicity. Registration for the Workshop may be made in advance to CFAC, 36 S. Wabash avenue, FRanklin 2-4283. The fee for a six-week clinic is \$17.50 if paid in advance.

• **Telephone Pioneers** — The 33rd General Assembly meeting of the Telephone Pioneers of America will be held in Chicago, September 16-17-18 with Western Electric as the host company to some 1,200 delegates and guests who will be headquartered in the Conrad Hilton Hotel. A highlight of the meeting will be Pioneer Night on September 17 in the Chicago Stadium to which active and life members of the Chicago area will be invited.

The Telephone Pioneers of America is an association of men and women engaged in the work of the telephone industry in the United States and Canada who have spent 21 years or more in this service. Conceived as a social organization, the activities of the Pioneer Associa-

tion soon broadened to include visiting sick and bereaved members and their families, visiting with retired employes, encouraging participation in community affairs, working on hobbies and other programs of mutual interest and helpfulness.

The Telephone Pioneers of America was founded in 1911 with some 500 members. Today it has some 193,000 members, living in every state in this country and every province of Canada. It is unique in that it is the largest social industrial organization in the world.

• **Purchasing Workshop** — The Purchasing Agents Association of Chicago will stage a two-day workshop on October 21, 22. It will be held at and is sponsored by the Illinois Institute of Technology — Department of Business and Economics. Outstanding discussion leaders have been engaged to help solve important problems confronting all purchasing personnel. Registration information may be obtained from the Purchasing Agents Association, 134 N. LaSalle Street, Chicago 2, Ill. STate 2-1940.

• **Executive Game Demonstration** — The Northwestern School of Business has invited 240 executives to attend all-day demonstrations of the decision-making game (known as the "UCLA Executive Game" or the "Top Management Decision Game") on September 23 and 24 at the S.A.E. Temple in Evanston. The businessmen will have an opportunity to see the game in action and perhaps see how it might be utilized in their own organization. Further information on the demonstration may be obtained from Professor John L. Dillinger of the School of Business.

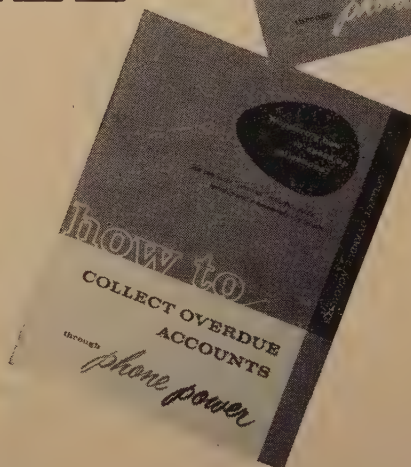
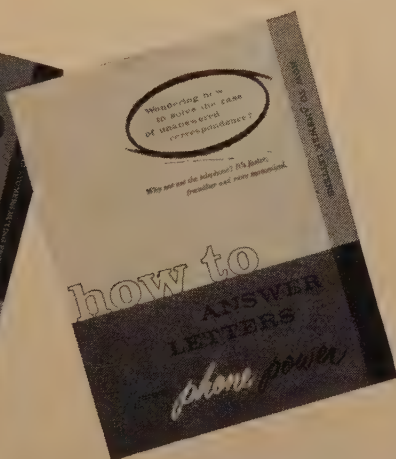
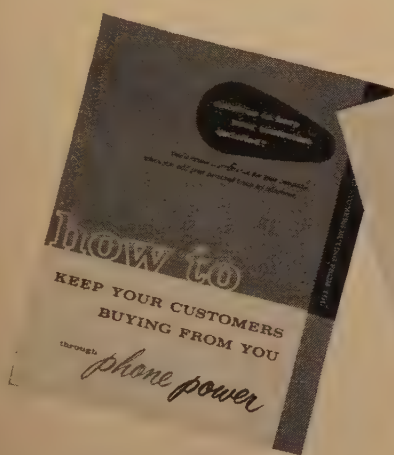
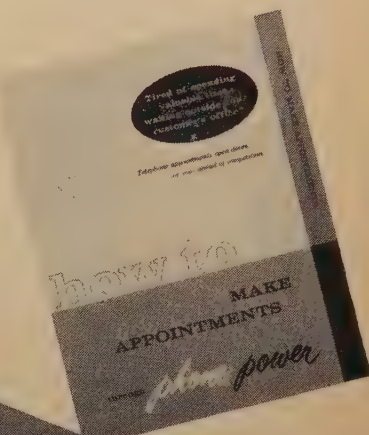
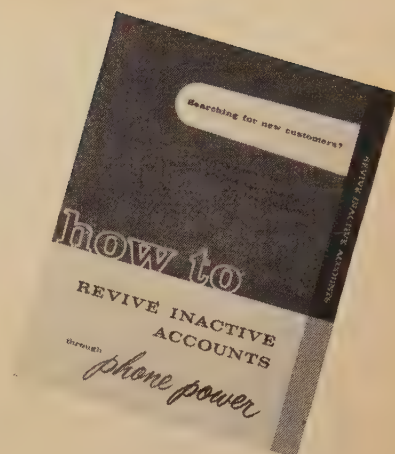
• **All About Arkansas** — The Industrial Development Commission of the state of Arkansas has just published a four-volume, 500-page encyclopedia about the state of Arkansas. It includes the 87-page Economic Atlas of Arkansas, the

(Continued on page 35)

PROVED BUSINESS AIDS TO HELP YOU CUT COSTS, INCREASE PROFITS!

Here are the step-by-step answers to common business problems. There's no guesswork about the method outlined in these easy-to-follow folders. Each step has been carefully worked out to give you a *proved* effective blueprint for your business.

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How to keep customers buying from you — through phone power. It costs much less to keep customers, than to look for new ones. Here are proved effective ways to keep them on the active list.

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How to revive inactive accounts through phone power. Some of your best prospects for new business may be hiding in your file marked "inactive." Revive their former value with phone power.

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ILLINOIS BELL TELEPHONE

"Business Builds with Phone Power"



A Blueprint for Executive Training

By J. ROSCOE MILLER

**A leading educator discusses the bond between business and education
and the modern needs in educating men for business careers**

A COLLEGE president has been defined in many ways, some humorous, some satirical, all containing distortions in varying degrees of the truth. The man who described a college administrator as a resident of an isolation booth at the peak of a large ivory tower perhaps gathered a chuckle from his listeners, but missed his point by a wide margin. In actual practice I find that more truth lies in the description that the college president is the chief executive of a multimillion dollar concern that is not an ivory tower, but is a dynamic entity dealing in goods and services vital to the market place, the factory, the laboratory, the government, the arts, and, in fact, every area of human idea and endeavor.

The modern university is a unique type of big business with its own peculiar type of management problems and methods. For many reasons it must differ from a corporation created for the purpose of producing a salable product to be marketed at

a profit. Its internal procedures, and discipline are different from those of a business organization. It is not so closely integrated and to a great extent lacks the hierarchy of authority so necessary to a business firm.

An Essential Similarity

These differences notwithstanding, there is an essential similarity between us that must be emphasized, namely, that free enterprise is as essential to intellectual progress as to economic progress. Business functions best when free and open competition influences prices and quality and inspires research into new products and new markets. On the campus we function best when we welcome into our midst a variety of skills and viewpoints, relying on open competition among them as the surest safeguard of truth.

The bond between business and education and modern needs in educating men for careers in business can be better understood if we briefly sketch some historical developments. Fifty years ago when the first class in business was taught at Northwestern, leaders who were college graduates were the exception in business and industry. For that matter, they were rare in all fields. In the intervening half century, the

number of students enrolled in privately supported colleges and universities has increased seven fold. The number registered in public institutions of higher learning has multiplied more than 17 times. Here in Illinois there was an increase in college enrollments of over 100 percent in the twenty years between 1930 and 1950. A variety of statistics, both sobering and challenging, predict even more crowded campuses in the next few years, based on the mushrooming population and larger percentages of high school graduates going on to higher education.

In answering why this has come about, it is apparent to everyone that there is a demonstrable financial advantage to the college graduate, except perhaps for the teachers, in our society. But of greater importance, society has developed a seemingly insatiable demand for trained minds not only to develop and direct its increasingly complex technology but to provide it with individuals whose breadth of knowledge and wisdom will enable them to understand the social and economic factors that determine whether technological advances work for the benefit or detriment of mankind. Today we are at the opposite end of the pendulum from fifty years ago. Rare indeed is the executive or

The author is president of Northwestern University. This article is a digest of his address at the Institute for Management commencement exercises.

University Hall on the Evanston campus of Northwestern University.



J. Roscoe Miller

leader in his field without allegiance to an alma mater.

This present status has come through evolution, at first gradual, but recently so rapid that it might better be called a revolution. In 1776 there were nine institutions of higher learning in the colonies, even more than in the mother country at that time. All nine are still in good health, a fact that might pose some interesting actuarial questions for insurance men.

Classical Curriculum

The curriculum of that age was largely classical. Anything that wasn't of immediate and definite value to anyone other than teachers or preachers was frowned upon. But the development of industry and technology, coupled with our steady population growth forced our attention to such fields as economics, sociology, and technical and professional training—until higher education finally turned from the classics to narrowly defined specialties. Business schools and technological institutes grew in enrollment and stature on the university scene. Every broad and enlarging specialty set up shop on campus.

Sometimes in protest, sometimes in self-interest specialties such as journalism, music, and speech arranged a curriculum of their own, a

curriculum suited to their real or fancied needs and often enough ignoring the sciences as thoroughly as technology often ignored the humanities.

The inevitable result was not long in coming. The specialist knew more and more about less and less, but without a basic background and fundamental understanding, was unable to qualify as a leader in a complicated expanding society. Business soon asked for more than an economist, medicine for more than a skilled technician, and even the artist found that it was difficult to adjust to our modern day world without a rudimentary knowledge of the physical world both within and without his body.

To fulfill the needs of modern life, universities have moved to eliminate these lacks and loopholes in a specialized education. At Northwestern, for example, we now have what I think is a unique approach in applying general education to our undergraduate schools. Traditionally, Northwestern has had seven undergraduate schools—liberal arts and six others. Each went essentially its own way and students outside liberal arts were receiving training aside from their professional, only on a relatively uncoordinated basis. We moved to correct this last fall with the help of Carnegie Foundation funds by initiating for all en-

tering freshmen a general education program extending through the student's four years here. No matter what school he is in, the student is supposed to learn to read and write, and then move on from there to a working knowledge of philosophy, literature, art and music, science and mathematics, and social science and history.

Changes have also been taking place in the whole approach of our school of business to educating men for business leadership. Significant modifications have been made in the last few years in the undergraduate curriculum, in teaching materials and methods... modifications aimed at creating what I call a liberally educated man. To my way of thinking, a liberally educated man is not only a highly specialized expert in a relatively narrow field, but one who is able to bring intelligent considerations of all relevant factors from other fields, human, political, or technological that bear upon it.

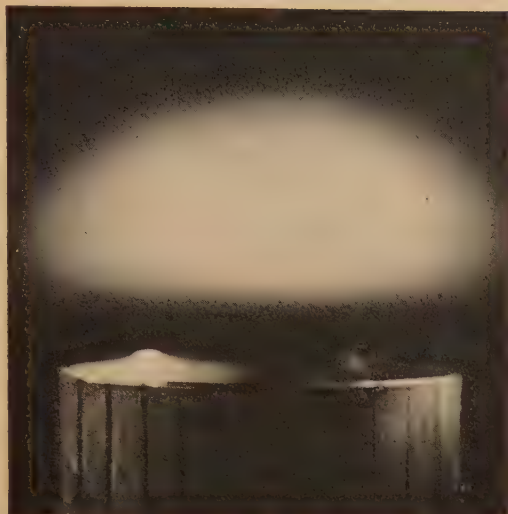
With this background of history let us try to assess those qualities in men which business seeks from education, qualities that set aside the man destined to move toward executive responsibility.

Complexities Grow

No one will argue the fact that business management is a vastly more complex affair than it was a few years ago, mainly because our society gets more and more complicated by the day. Not only world-shaking events such as a rise of conflicting economical and political ideologies and the discovery of new forms of energy give problems to the business man, but also the day to day problems he must face such as the shifts of population from the city to the suburbs and other marketing problems—or the affluence of our society that now makes it possible to promote the purchase of a second or even third automobile for the family.

These changes demand abilities far exceeding those that were called for in the past. Essentially business leadership demands the same breed of constructive mind... imaginative, resourceful, and capable of long-range thinking... that characterizes the scientist. But to this the business executive must add an-

(Continued on page 30)



Spectroscopic measurements of radiation temperature include studies of flames similar to this acetylene-oxygen flame

Precision Instruments: A Key to World Power

By **RAY CROMLEY**

Currently the U. S. is lagging behind Russia in some basic research; Can we catch up?

THE economic-military race between the United States and the Soviet Union may develop into a race for new precision instruments. These measuring "tools" are vital in the development of superior missiles, high-speed aircraft, satellites, atomic fusion power and in the large-scale automation of industry.

Right now, the United States is

lagging behind the Soviet Union in some of this basic instrument research. Worse yet, the Soviet apparently has a soundly-conceived crash instrument development program designed both to speed intercontinental ballistic missile development and to assure the rapid automation of its industry.

In the United States, the develop-

ment of missiles, rockets and high-speed aircraft is being retarded by our inability to measure accurately high temperatures. Our development of new jet-age rocket materials is being held back by our inability to measure high pressures accurately. Development of fuses and missiles guidance systems is being hindered by our inability to measure extremely high frequencies with accuracy. Development of an ICBM and a large satellite is being slowed by inability to measure large forces precisely.

Key scientists at the U. S. National Bureau of Standards in Washington say, in fact, that the reason the Russians are able to put up a far larger satellite than the U. S. can, and the

(Continued on page 28)



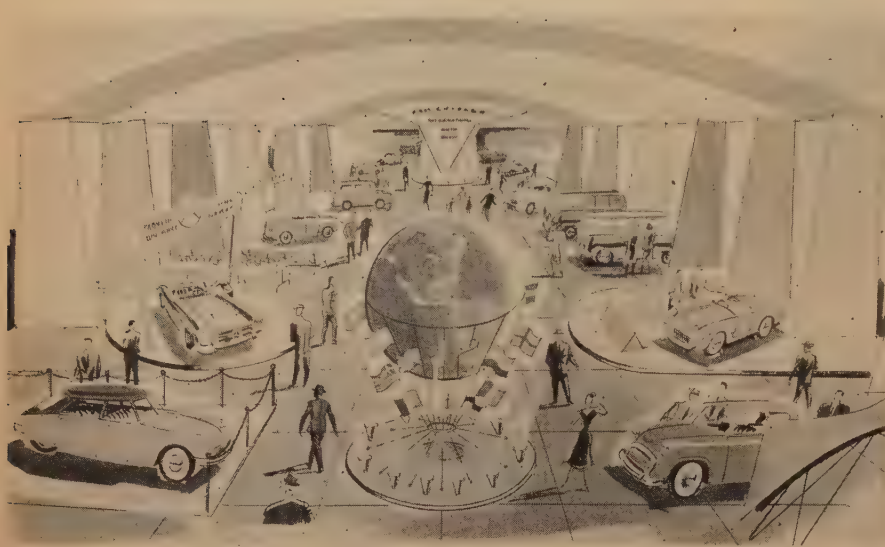
Preparing for calibration of commercial optical pyrometer (center) using the standard pyrometer



Vacuum evaporator used to prepare evaporated-film strain gages
National Bureau of Standards Photos

1959 Chicago International Trade Fair To

Nearly 50 per cent of exhibit space already sold: Midwest distributors and retailers expect millions of dollars of extra sales from 1959 Fair



"A Show Within A Show" . . . the First Annual Chicago International Auto Show will be a major feature of the 1959 Chicago International Trade Fair. More than 40 lines of automobiles of many countries will be exhibited



Pretty feminine employees of Sears Roebuck and Company model fashions. In this exhibit at the 1957 Fair, Sears received requests to send catalogs to such places as Singapore, India, Greece and Okinawa.

An energetic young Chicagoan with a highly contagious type of enthusiasm made a special visit to a foreign trade show in New York City. He wasn't a buyer — nor was he a salesman, at least not in the usual sense of the word.

He met a French manufacturer

pretty well down in the Gaulic dumps. The Frenchman was muttering invectives about not having much luck peddling his finely machined hardware. "Go to Chicago and your worries will be over," prescribed the Chicagoan. "Haven't you heard that Chicago is the greatest distribution center for hardware in the world?" The Frenchman hopped a plane for this midwestern capital of business and industry, and in no time at all his order books were filled.

A Belgian electronics manufacturer with an attractively priced, well designed line of high fidelity sets was confronted with similar sales resistance at the New York show. Then, he met the young man from Chicago. The result — he sold out the entire year's production of his plant in Belgium to a large retailer in Milwaukee, a sister industrial city 90 miles to the north of Chicago.

Similar, too, was the experience of an Italian manufacturer of exquisite individually designed pieces of costume jewelry. Taking a tip from the young Chicagoan, he spliced in a Chicago trip before returning to Italy, and wound up getting his big-

gest American order by calling upon a leading store on Chicago's famous State Street.

"There is no doubt about it — a manufacturer simply cannot sell Chicago and the great midwestern market with its insatiable appetite by confining his efforts to trade shows in New York City," explains Richard Revnes, the Chicagoan who buttonholed the foreign exhibitors in New York. A key man with the Chicago Association of Commerce and Industry, Revnes is working at high pitch on what is expected to be Chicago's most effective trade show for foreign exhibitors in the city's history.

The big show — the 1959 Chicago International Trade Fair — will be staged July 2 through July 18 next year along the two mile exhibit way of a refurbished Navy Pier jutting into beautiful Lake Michigan.

A wave of advance interest, supported in many instances with early reservations, has given every indication of a sell-out of the 160,000 net square feet of exhibit space to foreign manufacturers and their representatives. Already, nearly 50 per cent of the exhibit space is under contract.

Limit on Auto Space

In fact, for one classification of exhibits — that of foreign automobiles — the Chicago Association of Commerce and Industry has been forced to place a limit on space available a year ahead of time, so great has been the demand. Incidentally, the exhibit of foreign automobiles — as a special feature of the 1959 Chicago International Trade Fair — will represent the first major auto show in the midwest given over exclusively to the overseas models that are growing so rapidly in popularity.

Aside from this special feature, six major classifications of exhibits have been slated thus far for the

Be "Sell Out"

By **TOM BUCK**

fair—food and beverage, gifts and handicraft, industrial machinery, office equipment, textiles and apparel, and sporting goods and equipment. Several other classifications are still to be added.

Altogether, the Association is counting upon 500 foreign exhibitors who will show 3,000 to 4,000 different items, including a host of consumer goods, as well as a wide variety of products for commercial and industrial uses. The exhibits will come from 32 countries—from Europe, North Africa, the Middle East, South America, and the Far East. Poland has reserved exhibit space, and several other Eastern European countries have registered definite interest.

Confident Outlook

There's a high feeling of confidence at the Chicago Association of Commerce and Industry about the prospects of the 1959 International Trade Fair. It's somewhat akin to a sixth sense of knowing that the timing is just right—that 1959 was meant to be the year for a truly successful fair in Chicago for the introduction of thousands of foreign products to the 60 million consumers who make up the mid-American market.

But there is much more than mere hunches about 1959 being the ideal year for a major international trade show in Chicago. Consider, for a moment, two other special events coming up next year. Both are of historical world importance. Both are destined to elevate Chicago and its great mid-American market to an even higher level of significance, not only in relation to other parts of the United States, but to the world at large.

One special page of history for 1959 will concern the opening of the St. Lawrence Seaway—the development that will make the vast

(Continued on page 27)



Canadian naval vessels were honored "guests" at the 1957 Chicagoland Fair. During their three day stay the men and ships of the Canadian Navy participated in a series of impressive ceremonies



Tourism was an important part of the Canadian exhibit at the 1957 Chicagoland Fair. As a result many inquiries were received at the exhibit regarding travel in the Canadian vacationland

Consumer goods of European manufacture received great interest in the 1957 show. In 1959 the Chicago International Trade Fair will feature products from Europe, Asia, Africa, and South America



Business Highlights



A. B. Dick Company's new offset check imprinter. It will personalize and code a year's supply of checks for five individual accounts in three minutes. Code numerals of special design (lower left on check) are printed in magnetic ink to signal newly developed electronic check sorting and accounting machines

Interior of the Burlington Railroad's newly completed Freight House 8 at Berwyn, Illinois. It has two groups of four tracks each that can accommodate a total of 184 rail cars. Three platforms facilitate the transfer of less-than-carload merchandise freight to and from truck trailers parked at docks on the north and south sides of the steel building, which extends nearly a quarter of a mile in length and contains 340,000 square feet of covered area



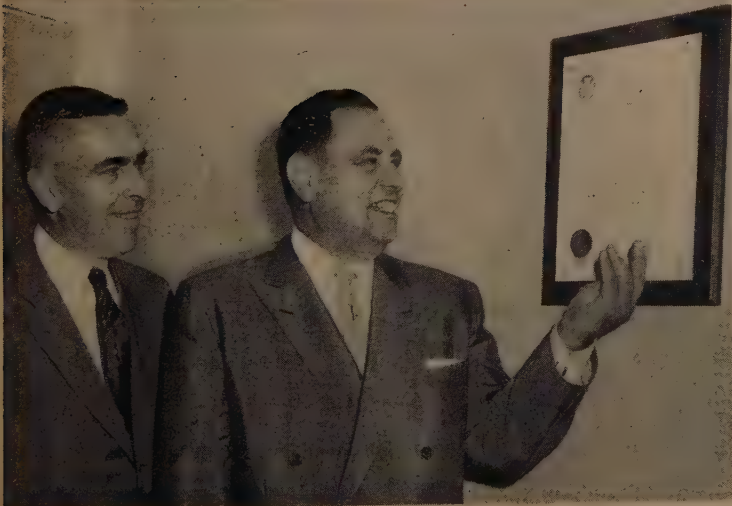
A shipment of 269 Renault automobiles at the Illinois river terminal in Joliet. It is said to be one of the largest single shipments of autos to reach Chicago by water. The French cars enter the country at New Orleans and were consigned for midwest distribution. American Barge Line handled the shipment from New Orleans

Chicago Tribune Photo



Left: the 1150 Lake Shore Drive apartment building. The 24-story structure has 250 apartments (three different designs — studio, one bedroom and two bedroom). Above: happy with one of the many innovations in the building are, left to right, Frank LaCroix, building manager; Charles F. Gardner, general manager of the Lake Shore Management Company, owners of the building; and Raymond Sher, a partner in the owning company. The board in the background shows residents, electronically, whether or not they have any mail or messages

A specially designed telephone for hospitals is tried out by a pretty "patient." The phone's dial is located at its base to facilitate easy use by bedridden patients. It is attached to the new Minneapolis-Honeywell Bedside Control Center and also is used in conjunction with a closed-circuit television set to allow patients to talk to visitors in the hospital waiting room. The Control Center also enables a patient to do many things by just a twist of a knob. These include temperature control, adjustment of the level of the bed, open or close windows or drapes, or communicate with the nurse



Edward C. Logelin, vice president, United States Steel Corporation, points to a plaque given to him by the Chicago Chapter of the American Institute of Architects in recognition of his part in Chicago Dynamic Week. John R. Fugard, Jr., president of the Chicago Chapter, looks on



Chicago Helicopter Airways operates world's largest scheduled 'copter line using the 12-passenger Sikorsky (S-58)



CHA has 101 passenger flights daily. The service runs between Chicago's three main airports and was recently extended to serve Winnetka, Illinois, and Gary, Indiana



Interior of twelve passenger helicopter

THOUGH heads still turn and small boys shout when a "whirly bird" flies by, in a single decade the helicopter has evolved from novelty to a new dimension in transportation. Helicopter lines, both chartered and scheduled, have developed enough muscle to play David to the transportation industry's Goliaths.

Appropriately, as the nation's transportation center, Chicago has seen the greatest growth in helicopter use. Chicago Helicopter Airways began as a charter operation at the end of 1946, today operates the world's largest scheduled helicopter line, in terms of passengers and miles flown, with 101 passenger flights daily. The service links O'Hare International and Midway Airport with each other and Meigs Field at the edge of the Loop, and this year was extended to include Winnetka, Illinois, and Gary, Indiana. CHA also flies mail three times daily to 54 Chicago suburbs.

Serving business and industry on a contract basis is Helicopter Air Lift, Inc., now three years old, which

Helicopter Business Booms in Chicago

In last ten years "whirlybird" flying has evolved from novelty to a new dimension in transport

By JUNE BLYTHE

provides a kind of Cadillac air-cab to ferry VIP's and equally important cargo, as needed. HAL already has expanded to two other major locations, Houston, Texas, and Cincinnati, Ohio, and expects to be operating in another ten large cities within two years.

This growth potential was prophesied in an early investment analysis of helicopter operation when Crutenden Podesta and Company called the rotor-ship "the most self-sufficient vehicle known to man." Cars need highways, trains need tracks, ships need docks and piers, and fixed-wing planes need runways, the report pointed out. The helicopter, however, requires only a clear level space a little larger than itself.

Chicago's physical layout uniquely suits the helicopter's needs. The city's pattern of arterial streets, highways, and river branches fanning out from the Loop offer safe fly-ways to and from O'Hare and Midway. The concentration of business offices and convention facilities in the Loop means fast surface transit to virtually every downtown destination from Meigs Field.

Traffic Congestion

As CHA's executive vice president, C. W. Moore, puts it, "The helicopter offers one important answer to the complex question of what to do about surface traffic congestion — fly over it!"

It was, in fact, the undeniable similarity between big-city traffic and Korean mud that first gave Chicagoan Hal Connors the idea for Helicopter Air Lift. In the Korean War, the impassable terrain made it

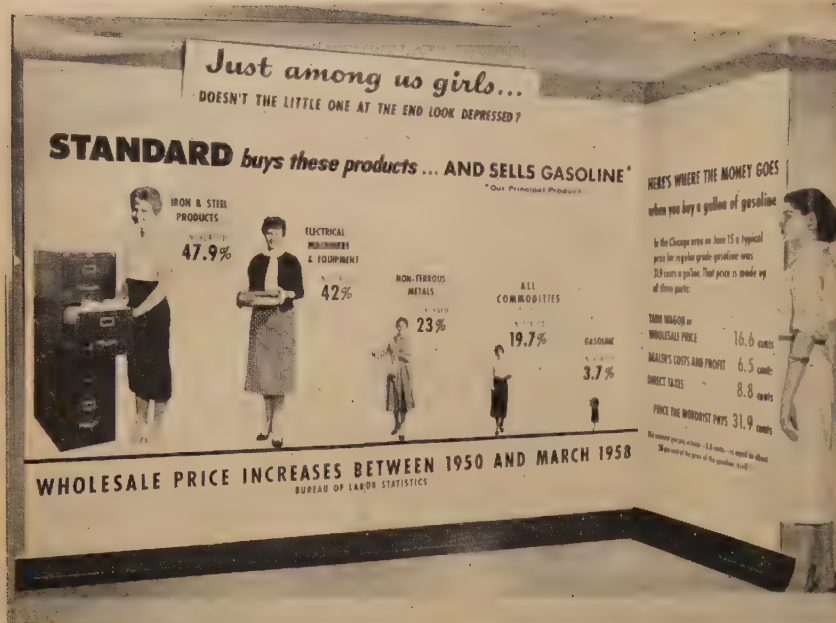
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H. J. Underwood, division manager of Shell Oil, is a regular customer of Helicopter Air Lift, Inc. Above, he and his wife watch helicopter arrive at their Glenview home . . .



. . . Mrs. Underwood waves farewell as the helicopter takes off. In its three years' operation, HAL's original four contract customers have grown to almost 100, averaging about 1,400 air miles per day



Another Chicago Booster

Employee communication requires an explicit message delivered with impact through an interesting medium on a continuing basis if it is to succeed. That's a big order, but one way Standard Oil Company (Indiana) is reaching this objective is through a huge display window incorporated in the newly designed main floor lobby at its general office building in Chicago. Displays are changed monthly to deal with different subjects management wishes to communicate to its employees.

Use of the display case follows adoption of a Standard Oil Company (Indiana) management philosophy that straightforward employee communications "is an integral element in the substance of our basic philosophy of management." Displays, like the one pictured above pointing up the high cost of materials for doing business while gasoline prices proportionately are depressed, are coordinated in theme and purpose with other media. Employees are used as models in the photographic displays to further attract attention and assist in getting the message across. Beverly Frazee, a Standard Oil secretary, views the display above. She is also the figure representing the gasoline price increase.

necessary to supply the United Nations troops by parachute drop. Ground companies, however, often did not know how to set out 'chute targets to allow for wind and drift. Conners was assigned to visit the troops by helicopter and teach them their part of the air-drop job. No canyon proved too steep, no mud too deep for the versatile whirlybird.

Conners' enthusiasm for the 'copter's adaptability grew, and was more than justified when the rotor-ships saved 22,000 lives in rescue operations—a feat that brought world acclaim to the still-novel ships. His commander was Brig. Gen. John P. Henebry, head of Chicago's Skymo-

tive, Inc., a business and industrial service using fixed-wing craft. The two men discussed the feasibility of a parallel helicopter service long into many a Korean night.

The discussions persisted when they returned to Chicago, Henebry to Skymotive, and Conners to his post as assistant to the president of Graver Tank and Manufacturing Company, Inc. In 1955, Helicopter Air Lift was established as a division of Skymotive, and Conners became general manager. Within a few months, HAL was operating four three-place Bell 47's, and recently added a fifth ship, a four-place Bell 47-J.

Among the advantages of helicop-

ter travel for business and industry, the most obvious is the savings in time. Says George Clements, president of Jewel Tea Company, "It cuts two or three hours' travel time on a round trip for myself or any of our executives when we go from our Melrose Park offices to the Loop, or to Barrington, or to our south side plant." Jewel maintains three heliports of its own.

Clements, like other executives, also has discovered areas of business where the 'copter can perform services never before possible. Jewel, for example, uses the rotor-ships to survey new store locations. Reports on possible sites are checked out by 'copter-flown executives who can see for themselves, hovering at about 200-foot altitudes, the traffic patterns, location of homes, density and relative positions of competitive stores. Walgreen drug store locations similarly are checked by helicopter. Jewel also dramatizes new store openings with free 'copter rides, awarded as prizes in drawings, and with the arrival from the skies of celebrities to perform the traditional ribbon-cutting.

Appraisals and Surveys

Real Estate Research Corporation employs the 'copter's unique hovering ability in appraisals of larger structures or groups of them, and in surveys of client properties or potential locations. Morris A. Lieberman, director of RERC's appraisal division, says the 'copter permits a good look at less accessible locations, such as those along rivers. "It's difficult to walk along a river bank and know just where something should be built," says Lieberman, "and if the land is unimproved, it may be impossible. Maps are not always reliable, because the course of a river may change over a period of time." The 'copter affords a close-up and an area-wide perspective on the same trip.

RERC relies heavily on aerial photography, too, and for such purposes as a count of housing units, photos made from a 'copter are ideal. Frequently, such as in studies of fast-growing communities, photos are taken periodically to permit comparisons.

For sales promotion purposes many companies regard the 'copter as without peer. The rotor-craft are



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sufficiently new in civilian life so that many people have not yet experienced them. When a sales manager ferries his customers in this modern magic carpet, he makes an impression not likely to be forgotten.

Diamond T Motor Truck Company, for example, kept two 'copters busy throughout the American Trucking Association convention in Chicago last year taxiing customers and their wives between the Loop and Diamond T's factory. Says vice president Storrs Baldwin, "We built

up a reservoir of very valuable good will."

Cook Electric Company also uses the 'copters chiefly for transporting customers, whisking them in a matter of minutes from Midway or O'Hare to Cook's Morton Grove plant, a trip that takes one and a half to two hours on the ground.

For public relations promotions, too, the helicopter pays off. Motorola, for example, has produced Bob Feller at four boys' baseball clinics in as many suburbs on one Saturday by using HAL's service.

Robert W. Galvin, Motorola president, flies his own 'copter to commute daily from his Wisconsin summer home to his Augusta Blvd. offices in Chicago.

In its three years' operation, HAL's original four contract customers have grown to almost a hundred, averaging about 1,400 air miles per day. Conners attributes a large share of this expansion to the trend toward decentralization and diversification in business and industry. At the Chicago Association of Commerce and Industry's recent Business Aircraft Conference, he called attention to the scattering of company facilities, especially apparent in Chicago. Today's company may maintain a sales or management office in the Loop, a laboratory in the suburbs, a warehouse on the west side, a manufacturing plant on the south side and a second production facility on the north side. Executives riding herd on such widely separated locations could spend more time in transit than in supervision, if dependent on surface vehicles.

Speed-up In Schedules

For the public travelling long distances, the speed-up in fixed-wing schedules is proving an important stimulus to scheduled helicopter service. Chicago Helicopter Airways' Moore explains that faster airline trips create an impatience in the passenger. When jets start operating, the time from New York to Chicago will be slashed to 90 minutes. Jet passengers are likely to pass up a 75-minute surface trip to the Loop in favor of 11 minutes in a 'copter — especially since fares are competitive with those for taxis.

CHA will carry 100,000 passengers this year, its second as a scheduled airline. (The line has carried air mail since 1948.) Thus, in two years, it has reached a passenger total that required 20 years for several of the local service fixed-wing lines to attain.

Scheduled 'copter service was pioneered by the United States Post Office Department, consistent with its history of fostering every new form of transportation since the stage coach. In cooperation with the Army, the Post Office flew two helicopters into Chicago in 1946 for a two-week demonstration of air mail service between the main Chicago

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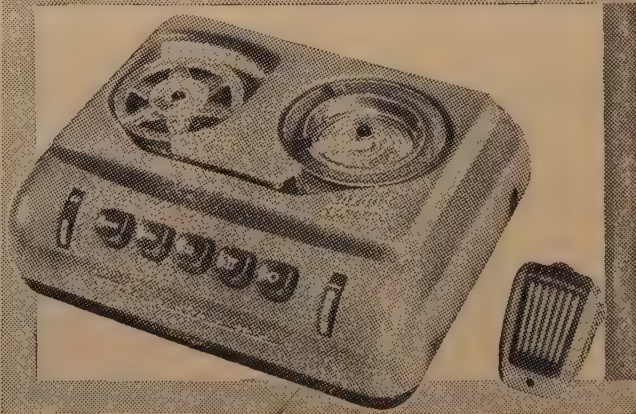
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Post Office and Midway. A similar demonstration was staged in Los Angeles.

Today there are three scheduled helicopter lines in America, serving Los Angeles and New York in addition to Chicago. In the ten years since their start, the lines' combined annual revenue miles have jumped from 284 million to 1,604 million. Though small in comparison to the national fixed-wing lines, the helicopter operators are enjoying a faster rate of growth.

Aids National Airlines

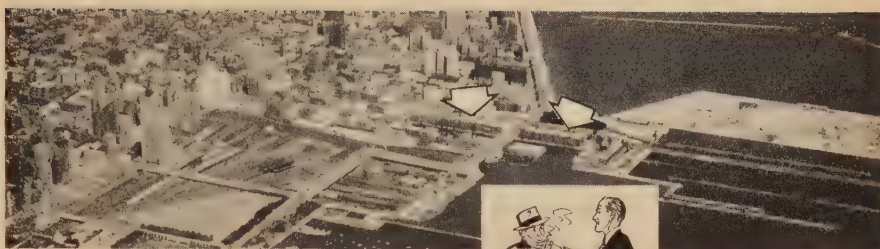
The national airlines look fondly on the helicopter because it enables them to overcome passenger gripes about the long ride to the airport. In fact, CHA's shuttle service undoubtedly has aided in the transfer of more flights to O'Hare.

The 'copters enjoy an enviable safety record. One reason lies in the inherent safety of the machine's design. If an engine quits, the 'copter goes into autorotation, and settles slowly like a maple leaf. Another reason is the scrupulous maintenance and inspection on which the operators themselves insist. Seat for seat, a 'copter is vastly more expensive than a conventional plane, and it is constantly groomed and fussed over. At CHA, all parts are "lifed," and the ships are checked over every night. HAS spends an average of two hours on maintenance for every hour in flight.

Both Moore and Conners show sharp awareness, too, of their "sensitive" public relations roles as the leaders in a new form of transport. Conners, for example, accepts only one out of three pilot applicants, flight experience notwithstanding. "Our pilots sit next to company presidents and board chairmen," he explains, "and we select them for their overall judgment, not merely on the basis of their time in the air."

Moore, who was the first paying helicopter passenger in New York, and the first helicopter pilot in Argentina, also flew the first commercial 'copter into Chicago, in 1947. With T. H. Reidy, CHA's founder, he brought the machine in to demonstrate its reliability to the Civil Aeronautics Board, which was hearing applications for certification for air mail flights. The Board awarded certification to Reidy.

Despite the rapid growth of both



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services the commuter's wistful dream of descending to his desk from the clouds is still somewhere in the future. One problem is the availability of larger ships. CHA now uses the 12-passenger Sikorsky (S-58), at a cost of \$273,000 each. Hopefully, the 25-passenger S-61 will be available by 1961, and a 35-passenger ship by 1966. Moore is convinced that although the new 'copters will be even more expensive, it will be possible to amortize them at lower fares because of the increased volume. He anticipates a half-million passengers annually in five more years. Meanwhile, the military services absorb the bulk of 'copter production and operate about 3,500 machines, compared to some 450 commercial 'copters in North America.

Clarification of Regulations

Another problem is the need for clarification of local 'copter and heliport regulations, together with sound planning for future heliports, both public and private. Largely because the 'copter is new, the public does not yet understand its fundamental differences from fixed-wing craft. Conceptions more suited to conventional planes often clutter municipal regulations and hamper 'copter operations.

The Chicago Association of Commerce and Industry is working on this problem through its Aviation Committee, which brings public officials together with businessmen and the aviation industry. A special subcommittee is studying heliport and airport needs, and is expected to complete the first phase of a two-part report this year.

The future? Hal Connors estimates that about 3,000 Chicago area companies could benefit from the 'copter's advantages, and that an ever-increasing number will do so. This will mean many more private heliports as well as machines.

Several observers, including the Chicago Plan Commission (now Department of City Planning) have predicted the need for a third major public airport in the Calumet area. A third airport will add both to the importance and the business growth of Helicopter Airways.

While the notion of a 'copter in every garage may never prove practicable, the whirlybird seems destined to become as familiar as conventional craft by the end of its second decade.

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Chicago International Trade Fair

(Continued from page 17)

St. Lawrence-Great Lakes inland waterway navigable to 90 per cent of the world's commercial ships.

For Chicago, the St. Lawrence Seaway is of utmost importance. Located at the southwestern tip of Lake Michigan, Chicago ranks as the natural western terminus for this great inland waterway.

Here at Chicago is the all important connecting point between the St. Lawrence Seaway and another major inland waterway—the Mississippi river system spread like the

frame of a huge fan through the very heart of America and emptying into the Gulf of Mexico.

Here, too, in Chicago are other vital transportation factors that have made the city the natural distribution center for the United States. It's the center of the nation's vast railroad network, the focal point of the trucking industry, and the hub of the nation's far flung system of highways. Also to be recorded on a special page of history for 1959 will be the advent of commercial jet avia-

tion on a world-wide basis. Here, too, Chicago figures prominently.

Already the world's busiest center of aviation, Chicago is preparing for this new era by constructing a jet age terminal, O'Hare International Airport. With the new fast planes, no major city of the world will be farther than 20 flying hours from Chicago.

But even if one were to overlook these significant developments—the St. Lawrence Seaway and commercial jet aviation—Chicago's business and civic leaders are convinced that there are more than enough existing economic factors to make this city and its extensive marketing area one of the most attractive centers of world trade to be found anywhere.

"New York may have a larger population in its immediate vicinity, but its marketing area nowhere compares with the 60 million consumers of mid-America, for which Chicago is the commercial and industrial capital," explains Revnes, whose official title is managing director of the 1959 fair.

"Chicago draws from a vast trading area that includes such other important cities as St. Paul and Minneapolis, Des Moines, St. Louis, Kansas City, Indianapolis, Louisville, Cincinnati, and Detroit. Chicago also serves as the marketing and distribution center for such distant points as Dallas, Tex."

Trade Show Center

Also, as the trade show center of the United States, Chicago can be counted upon to outdraw New York City three to one in attendance for such events, Revnes contends. As evidence of this difference, he estimates that the 1959 Chicago International Trade Fair will produce an attendance of 750,000 persons, whereas the United States World Trade Fair in New York in May of this year drew an attendance of only 190,000 persons.

Even without a special fair, more than half a million buyers from all parts of the country flock to Chicago each year to shop the city's numerous trade shows. About this normal influx of out-of-town buyers, W. O. Ollman, general manager of the Merchandise Mart, one of Chicago's big trade show locations, has this to say: "Here in Chicago, the buyers



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can shop all of the merchandise in two or three convenient locations. In New York City they have to shop all over town."

Many of the 750,000 visitors to the 1959 International Trade Fair will be consumers whose visit will be for the pleasure of inspecting the thousands of products on display.

"With the fair open to the general public, foreign manufacturers are certain to whet the appetites of the large consumer public in Chicago and mid-America for their products," Revnes says. "And of immediate importance to the exhibitors will be the attendance of 150,000 buyers who are responsible for selecting the goods and products that go into the distribution channels," he emphasizes.

As every business man knows, it's often much more pleasant to do business over a good dinner table. So at the 1959 fair the foreign exhibitors and American buyers will be provided with a deluxe restaurant-lounge at Navy Pier exclusively for their use. For the general attendance, the world famous Palmer

House of the Hilton hotel chain will operate five attractive and spacious restaurant areas. In addition, two beautifully designed snack type restaurants with a total of 10,000 square feet of floor space will be operated by Wimpy International in conjunction with the Coca Cola Company and the Borden Company.

There will also be numerous special events including fashion shows, demonstrations and a continuous showing of colorful films from participating nations in the 2,200 foot Navy Pier auditorium.

Chicago's city government and the Association of Commerce and Industry are spending half a million dollars "dressing up" Navy Pier especially for the fair. Among the major improvements will be the erection of an eye-catching expansive facade and the installation of modern air cooling equipment.

"Chicago as a city gets excited about a fair," says Revnes. "All of our newspapers, radio and TV stations and everyone gets behind a major fair like this to make it a real civic enterprise.

"Chicago is eager to open wide its commercial doors to foreign manufacturers and their importer representatives at the city's International Trade Fair in 1959.

"Here in mid-America are to be found industrial and consumer markets with multi-billion dollar potentials to absorb imports; superb trade, transportation, and service facilities; expanding requirements for industrial products and materials, and virtually unexploited desires for imported consumer goods.

"At Chicago's 1959 International Trade Fair," Revnes emphasizes, "our overseas friends will find that mid-America is well aware of the fact that it is only good economic sense to match exports with imports — a recognition that international trade is truly a 'two-way street.'"

Precision Instruments

(Continued from page 15)

reason they possibly are ahead in the ICBM race may be because they are ahead of us in their ability to measure accurately some of the fundamental facts of nature — such as extremely high temperature and great force. And the Soviets now are applying this same basic scientific know-how to speed the automation of their industry.

Dr. Allen V. Astin, Director of the National Bureau of Standards, says, "as part of a five-year effort to increase national productivity and to challenge America's economic supremacy, the Soviet Union has been involved in a concerted effort to increase its measurement competence and to bring this competence to bear, as quickly and as directly as possible, upon instrument manufacture and finally upon production line and factory use. Their plans seem to be well considered and their programs are directed towards significant measurement and operational goals."

We have now reached the stage where most segments of U. S. industry need better instruments to do a better production job. And these new instruments aren't being developed rapidly enough.

The National Bureau of Standards has a new expanded program aimed at breaking that bottleneck. The new program started off partly as

(Continued on page 37)

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Industrial Developments

... in the Chicago Area

INDUSTRIAL plant investments in the Chicago area totalled \$4,906,000 bringing the total for the first eight months to \$128,073,000. Projects reported in August of 1957 totalled \$18,322,000, and the total for the first eight months of last year amounted to \$138,453,000. Projects announced during the month included the erection of new plants and expansions to existing manufacturing facilities, as well as acquisitions of land or buildings for industrial purposes.

• **Carters Ink Company**, headquartered in Boston, Mass., with a local operation at 11 W. Hubbard street, is planning to erect a new warehouse and office building in Harwood Heights, at 7400 W. Wilson avenue, which will contain 120,000 square feet of floor area. The company is a well-known ink manufacturer and the new warehouse will aid in its distribution to the midwest area. Klefstad Engineering Company, engineer and general contractor.

• **Time Chemicals, Inc.**, 4350 S. Wolcott street, is erecting a 43,000 square foot plant and office building at 3900 S. Karlov avenue. The firm manufactures industrial cleaning chemicals, and will relocate its entire operations to the new plant upon completion. A. Epstein and Sons, Inc., architect and engineer.

• **A. H. Robins Company**, Richmond, Va., has acquired the plant at 2101 Dempster street, Evanston, for a midwest warehouse. The company manufactures pharmaceuticals and its subsidiary, Whittier Laboratories, Inc., will operate part of the newly acquired plant. Baird and Warner, Inc., broker.

• **Gilbert and Bennett Manufacturing Company**, 128th and Kedzie avenue, Blue Island, is expanding its

plant with the addition of 31,000 square feet of floor area which will be used for warehouse purposes. The company's headquarters are in Georgetown, Conn., and it manufactures poultry netting and other wire products in the Blue Island plant. The company was organized in 1812 and the Blue Island plant was erected in 1885.

• **A. Finkl and Sons Company**, 201 N. Southport avenue, is adding 8,000 square feet to its plant. The company manufactures steel forgings. Morton L. Pereira, architect and engineer; E. L. Hallbauer, general contractor.

• **E. Edelmann & Company**, 2332 W. Logan boulevard, is adding 25,000 square feet of floor area to its plant in which it produces automotive parts and accessories. Bertrand Goldberg Associates, architect and engineer.

• **Triangle Conduit & Cable Company, Inc.**, 344 N. Canal street, is building a new midwest warehouse and office building containing 24,000 square feet of floor area located in Franklin Park in the Clearing Industrial District. The company manufactures wire, conduit, cable, copper tubing and plastic pipe. The plant will be erected by the Clearing Industrial District, Inc.

• **O'Bryan Bros.**, 4220 W. Belmont avenue, manufacturer of ladies' and children's underwear, is adding 19,000 square feet of office and warehouse space to its plant. The addition will be a one- and two-story with the office on the second floor. Klefstad Engineering Company, engineer and general contractor.

• **Grayslake Gelatin Company**, in Grayslake, is erecting an addition to its plant containing 18,000 square

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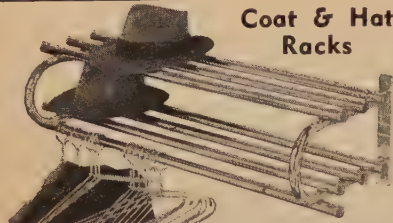
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feet of floor area. This firm is one of the leading producers of gelatin and gelatin products. Hal Chalmers & Associates, architect and engineer; George J. Miller, general contractor.

• **Richard D. Irwin, Inc.**, in Homewood is erecting a 16,000 square foot addition to its plant which produces text books in the fields of economics and business. John D. Jarvis, architect. Poirot Construction Company, general contractor.

• **Carey Grain Corporation** is erecting a granary at its plant at 250 W. 87th street, which will have an approximate capacity of 1,800,000 bushels. George Kennedy, engineer.

• **Park Rubber Company, Inc.**, in Lake Zurich, is erecting a 13,000 square foot plant to replace a plant about half that size which was destroyed by fire. The enlarged plant will produce mechanical products, cutting pads, blocks, rubber and metal adhesives and molded rubber products. Contract Engineers, Inc., general contractor.

• **The L. S. Starret Company**, 11 N. Jefferson street, is erecting an office and warehouse building at 4951 W. Harrison street. The firm, whose headquarters are in Athol, Mass., manufactures hand tools. The building is being erected by Bates Construction Company, and Edward L. Burch is the architect. The building will contain 8,000 square feet of floor area.

• **Consolidated General Products** Incorporated, of Houston, Texas, has erected a 10,000 square foot building in the Mannheim-North avenue Industrial District in Melrose Park. The new building is located on James place, to be used as the Midwest distribution center for building supplies manufactured by Consolidated. Arthur Rubloff & Company, broker, J. Emil Anderson & Son, general contractor.

• **Size Control Company**, manufacturer of gages and lapping machines, located at 2500 W. Washington boulevard, has acquired a one-story brick factory building at 2515 Maypole avenue which is adjacent to the present plant. Its newly acquired 15,000 square feet of floor area will allow the company to ex-

pand its manufacturing operations. Size Control Company is a Division of American Gage & Machine Company. Building Management Corporation, broker.

• **Towmotor Corporation** of Cleveland, Ohio has acquired space in the Pensacola Industrial District at 4215 N. Nordica avenue. This company manufactures gas powered material handling equipment. Missner Construction Company, general contractor. Max Wolfson, architect. Arthur Rubloff & Company, broker.

Executive Training

(Continued from page 14)

other quality, a quality now also challenging the scientist as well. That quality is the capacity to handle human situations with an informed sympathy for individual behavior, including his own, and of the dynamics that lead groups in one direction or another. A mind that is open, a mind that is attuned to the experimental and the new . . . more than ever before that is the kind of mind that is essential to business leadership. The challenge of just how we are to cultivate this kind of mind from the raw material that comes to us as freshmen is a critical one for education and business alike.

What should the business executive know beyond his specialty, whether it be accounting or world trade? Probably the first response that comes into focus in this technology-conscious post-Sputnik era is that the business man must understand the changes that science is making in our life. As man increases his command over his material environment, technology and science command greater importance in all areas of individual and national life, including business. The executive and the engineer must have an effective working relationship since the creation, production and distribution of new products are necessary to national economic health. Perhaps this need explains why so many practicing engineers leave their specialties and move into more generalized executive positions.

The businessman, the engineer and the diplomat all become partners in working out negotiation

dealing with technical problems of oil, water, and now even space rights.

In view of this, I think that a fundamental assumption we must make in educating for business responsibility is that even the near future will not be an exact repetition of the past. If this is true, then education toward responsibility must be in the gaining of understanding as well as skills. This gaining of understanding is one of the reasons a university exists, and in modern society, perhaps it explains why the university has realized a new high in prestige and respect. As President de Kiewiet of the University of Rochester, the commencement speaker for Northwestern's 100th graduating class, said in June, "The American university with its scholars, scientists, experts, and teachers has moved to the center of national power. The fantastic explosion of knowledge in our generation has made the egghead the man of the new age." Today's executive must be something of an egghead himself—that is, he must not only be a man of action, but a student of many fields other than his own.

Human Problems

But the businessman must also understand the people around him, as well as the physical world. Col. Lyndall F. Urwick, noted British management consultant recently put it most bluntly in a press interview. The reporter said, "One American management authority has said that ninety per cent of the top businessman's problems are human problems. Would you go along with that?" Col. Urwick's brusque answer left little doubt where he stood. "An underestimate," he said. "I should say 95 per cent." The reporter then asked if we are doing enough to attack these problems. Urwick's answer, "No, not a present."

Urwick suggested turning to history to examine human experience that is available, but not yet presented in terms helpful in solving management problems. With less emphasis he adds the political and social sciences. To his suggestions I would add religion, literature, the classics and the arts—those studies generally grouped under the heading of the humanities. These have an irreplaceable role in our educa-

tion because they are our main source of knowledge of what is foremost in human character and conduct.

The third area of knowledge necessary beyond the businessman's specialty is one with which I am particularly concerned, perhaps because I feel it is the most neglected. As a physician I treated a distressing number of executives who had an intimate knowledge of the rise and fall of the stock market ticker, but were unconcerned with the rise and fall of their own blood pressure. The executive must know himself. His physical and emotional health is vital to his business. Neglect of either can be disastrous. The executive, relatively lonely at or near the top, must know the signs that tell him he is pushing the machine too hard. He must know and practice

those elementary habits of diet, rest, and hygiene that will lessen the odds of degenerative illness.

Tension surrounds the executive, and is increased or lessened to whatever degree he understands personality dynamics and to which he achieves control over his own responses.

The boss who skips his vacations is working toward diminishing returns for his firm, his family, and himself. The man seeking relaxation and recreation at the golf course misses the point if he missed his lunch to tee off on time and leaves the foursome on the 15th green to rush to an evening appointment. Now I'm a firm believer in golf as recreation providing it doesn't become a compulsive ritual. But like golf, or any other pleasure carried beyond moderation, even the busi-

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ness lunch may hold hidden dangers.

Knowledge of one's physical and emotional self, together with discipline to practice what is known, is high on my list of necessary executive qualities.

I have dwelt at rather great length about what kind of a man the universities can produce to satisfy the demands of business and industry. It's time now to examine the opposite side of the coin by looking at the state of the institutions that are called upon to produce these men.

There are problems in education that make the college president worry. Most of them have to do with finances. Expanding enrollments, vastly expanded research efforts, and the seemingly endless upward spiral of operational and maintenance costs have combined to raise serious financial problems in even the most soundly managed and generously endowed institutions. They need more money for new facilities, and for daily operating expenses. If they are to continue to make their contributions to human progress, they must have a good deal more unrestricted money for basic research, not only in science and engineering, but also in the humanities and social sciences.

Faculty Salaries

Faculty salaries are the most critical factor in this rather darkly painted picture. Inadequate buildings may be a handicap, but an inferior faculty is sheer disaster. No matter what changes have taken place in educational methods and the content of the curriculum, it is still true that the heart of a university is its faculty. The quality of teaching will be only as good as the brains, training, devotion, and character of the men and women responsible for it. Today the university must compete successfully with business, government and the professions for these talented persons—and compete with far less flexible financial resources.

In the face of increasing enrollments and financial problems there is apparent a trend that must be controlled, although it is not likely to be reversed. For many years private and public institutions each educated about 50 per cent of the college students. At the moment, the privately-supported schools have

(Continued on page 34)

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Transportation and Traffic



PRESIDENT Eisenhower, on August 12, signed the Transportation Act of 1958 (S. 3778 and H.R. 12832). The so-called railroad-aid legislation is now Public Law 85-625. The new law: (1) authorizes the Interstate Commerce Commission to guarantee loans made to railroads from private sources up to \$500 million; (2) makes more effective the provisions of Section 13(4) of the Interstate Commerce Act which authorizes the Commission to remove discrimination against interstate or foreign commerce caused by any intrastate rate, fare or charge; (3) adds a new Section 13a to the act which will provide a method and procedures to make it possible for railroads to discontinue or change, in whole or in part, the unprofitable operation of trains or ferries, notwithstanding otherwise applicable state laws. Previously the commission had no jurisdiction over discontinuance of service unless a whole line of railroad was involved; (4) amends Section 15a of the act to permit more flexibility in rate making by adding a new paragraph which provides that in a proceeding involving competition between carriers of different modes of transportation, the commission, in determining whether a rate is lower than a reasonable minimum rate, shall consider the facts and circumstances attending the movement of the traffic by the carrier to which the rate is applicable, and that rates of a carrier shall not be held up to a particular level to protect the traffic of any other mode of transportation, giving due consideration to the objectives of the National Transportation Policy as declared in the act; (5) amends Section 203(b)(6) of the act by restricting the list of agricultural commodities, the transportation of which by motor carrier is exempt from regulation, in accordance with Ruling

No. 107 of the commission's Bureau of Motor Carriers. Exceptions are frozen fruits, frozen berries, frozen vegetables, cocoa beans, coffee beans, tea, bananas, hemp, wool imported from any foreign country, wool tops and noils and wool waste which has been carded, spun, woven or knitted, which will be returned to regulation, and cooked or uncooked (including breaded) fish or shellfish when frozen or fresh, but not including fish or shellfish which have been treated for preserving, such as canned, smoked, pickled, spiced, corned or kippered products, which will be exempt from regulation; and (6) redefines private carriage by incorporating in the act the primary business test enunciated by the commission in the Lenoir Chair Case and the Supreme Court in the Books Case as the criterion in establishing bona fide private carriage.

• **Prehearing Conference in Central Area Motor Rate Case Postponed:** The prehearing conference in No. 32385, Increased Rates — Central States Territory — 1958, and No. 32385 (Sub 1), Emergency Increased Rates — Central States Territory — 1958, scheduled for July 30, 1958, in Washington, D. C., has been postponed indefinitely by the Interstate Commerce Commission. The postponement was requested by the Central States Motor Freight Bureau. The proceeding embraces a petition filed by the bureau for a general investigation into motor carrier rate levels in Central territory and for an interim emergency increase of seven per cent in commodity rates and five per cent in class and exception rates pending outcome of the investigation.

• **Examiner Recommends Additional Railroads to Serve Port of Chicago:** In a proposed report, In-



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terstate Commerce Commission Examiner Paul C. Albus recommended approval of the applications of six railroads to construct a railroad line and acquire trackage rights on a joint basis to provide additional service at the Lake Calumet harbor of the Port of Chicago. The railroads seeking to provide additional service at Lake Calumet harbor are the Illinois Central, New York Central, Pennsylvania, Chicago, South Shore and South Bend, Belt Railway Company of Chicago, and Indiana Harbor Belt Railroad Company. The

proposed line would extend about 1½ miles from a point near Doty Avenue, Chicago, to the harbor port. The examiner recommended that the commission overrule motions to dismiss the applications of the six railroads filed by the Chicago, Rock Island and Pacific and the New York, Chicago and St. Louis railroads. The Rock Island now serves the port exclusively. The examiner's report said the Lake Calumet area presents one of the greatest potentials for generating traffic in the midcontinent area in the United

States because of its strategic location and the added flow of import-export traffic with the opening of the St. Lawrence Seaway next year will permit ocean going vessels to enter the Great Lakes and dock at the Port of Chicago. The examiner said that approval of the application by the six railroads would result in increased competition, better service, a larger freight car supply and lower rates for industries on Port District property at Lake Calumet Harbor. The examiner also recommended dismissal of an application by the Michigan Central, New York Central and Indiana Harbor Belt railroads to construct and operate a line from 126th Street in Chicago to Lake Calumet Harbor. The Chicago Association of Commerce and Industry supported the proposed additional railroad service.

Executive Training

(Continued from page 32)

dropped below 50 per cent and will probably have an even smaller share in the next few years. If this decrease in percentage of students is accompanied by a waning influence, the trend must be viewed as a serious threat to the vitality, balance, and freedom of our educational system. Such a possibility must be avoided by maintaining strong privately supported institutions, emphasizing the quality and educational leadership that has always been their strength.

The solution to the finance problem does not lie in any one direction, but in the simultaneous exploration of numerous paths both for cutting costs and for raising money.

One proposed plan for solving the problem suggests direct federal support to higher education. It is my own considered belief that in accepting assistance from the federal government, privately supported institutions would be making a serious mistake. No institution can accept federal funds without in the long run becoming subject to federal control. Each of you, I am sure, is tax conscious enough to insist that a government is morally bound to supervise the expenditure of the moneys it collects from its citizens. To do otherwise would be gross negligence.

It must be noted that in actual practice we compromise this princi-

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ple already by accepting certain forms of research grants from government agencies, and we are well aware of the possible dangers therein.

Another path we are following is a difficult one, namely, the raising of tuition. We have just announced at Northwestern an increase to be effective in September of 1959. Tuition brings in less than 50 cents of each university dollar, leaving a hidden scholarship to be provided by the university for each student regardless of ability or need. Yet we cannot follow this path to the point where we price ourselves out of business in competition with publicly-supported schools.

Perhaps the most encouraging path toward solving the financial question is increased alumni and corporate giving. At Northwestern the number of alumni giving to their alma mater has increased three fold in three years.

Getting back to the partnership of business and education, no group stands to lose more through a possible decline of independent universities than business and industry. It is indeed heartening to see that more and more business leaders are becoming aware of this fact and urging that their organizations support the independent colleges and universities to the limit of their financial ability and legal authority. I am even happier to note how many corporations are actually contributing not only for specialized research projects, but also for general educational funds, unrestricted money to be administered by the school where it will do the most good. This working partnership can be the most potent and significant factor in maintaining the influence of our system of privately-endowed colleges and universities.

Here, There and Everywhere

(Continued from page 10)

222-page Directory of Arkansas Industries, the 100-page Photographic Essay of Arkansas, and the Economic History of Arkansas. The Arkansas Encyclopedia is designed to serve as a reference tool, especially for those executives concerned with plant location. For details write to the Arkansas Industrial Development Foundation, State Capitol, Little Rock, Ark.

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Precision Instruments

(Continued from page 28)

defense effort. It was designed in part to help stimulate the development of new instruments needed by the Defense Department and defense industries to compete with the Soviet military-science advances. But the Defense Department is adding its support to the Bureau's efforts to spread instrument knowledge as widely as possible throughout U. S. industry because this will widen the defense base. Other sections of the government have seconded that program in order to enable U. S. industry to meet the new challenge of Soviet industry in trade as well as in arms.

In what fields does U. S. industry need better instruments? The answer: in almost every field. Here are some of the projects men at the Bureau of Standards are working on, including instruments they've recently developed. One group is trying to find better ways of measuring ocean waves, essential if naval architects and shipbuilders are to turn out better ships. Another group has just developed a new device to measure the toughness and "crackability" of leather, an instrument that will help shoe and leather goods manufacturers.

Electronic Computers

Other teams are trying to find better instruments — electronic computers — which can automatically make up company payrolls, keep track of inventories, evaluate bids and solve problems arising in the development of new industrial products. Still other researchers are trying to find better instruments for the measurement of sound waves in order to improve tools which use inaudible sound waves for high-speed precision drilling. Another group is trying to develop instruments to measure and analyze corrosion. The object is to improve control of corrosion, which costs U. S. industry more than \$5 billion a year.

In one laboratory they're working on an instrument which uses the X-ray spectrum for making more precise analyses of complex alloys, such as those used in jet aircraft and rockets.

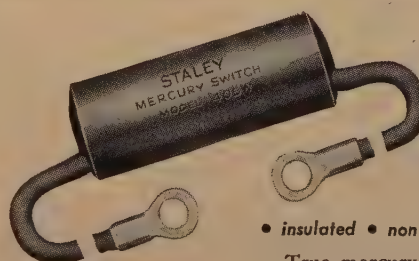
Some Bureau research men are de-

veloping special precision equipment, utilizing high-speed photography, to measure the properties of yarns, fibers and fabrics under shock loadings to enable the development of fibers to meet the needs of industry which sometimes requires thread able to stitch efficiently without breaking under strains repeated 5,000 times per minute and the needs of armorers making flexible body armor that must protect military men from exploding shell fragments.

In other research, Bureau men are

working on gadgets to measure how various kinds of plastics break down on exposure to sunlight, heat, oxygen, moisture, and nuclear radiation in order to determine what kinds of plastics stand up best. One aim: to see if there is any relationship between chemical structure and durability.

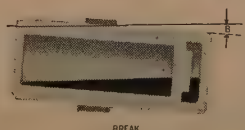
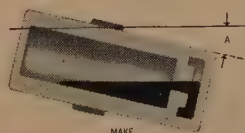
In one laboratory the research men are working on new gadgets to determine how various alloys and other materials change at high temperatures — instruments badly



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needed right now to aid in determining the best materials and the best way to shape these materials in building aircraft, rockets and missiles.

More prosaically, another team is attempting to develop new instruments that will measure accurately the strength of new materials used in constructing buildings and the strength of structures built by new and unconventional means.

Difficult Problem

One of the most difficult problems facing research men at the Bureau is automation. Development of automation in U. S. industry is being retarded by one problem: the extremely complex automation systems that would revolutionize the operation of factories often break down so frequently that they create major maintenance problems. Though each part is precisely made, there are so many parts in one of the complex automation systems that something is always going wrong. Research men at the Bureau are trying to find instruments to measure what goes wrong, while their fellow theorists are attempting to devise on the Bureau's blackboards some theory that not only will show the cause but lead to a solution of these breakdowns — perhaps an instrument that would feed back information which would throw some sort of compensating gadget into operation every time the system broke down.

And in another laboratory, scientists are attempting to develop instruments to measure very high pressure in the thought that super pressure ultimately will yield new forms of matter of scientific and industrial use.

Meanwhile, what are the Russians doing? Too much to make us feel comfortable, say the men at the Bureau of Standards.

Listen again to Dr. Astin:

"The Soviet program for standards and precision measurement is apparently operated from a high government level than any other industrial activity in the U.S.S.R. The investment in these areas is extremely large and seems to be especially directed toward fulfilling the precision requirements of complex automatic machine production for the intended automation of large segments of the U.S.S.R. industry.

"One thing is certain from Russia's own description of its program it fully understands the essential role of measurement and instrumentation in the technological development of the nation. The organization of measurement in government and industry is rigidly but, at least so it seems, rationally administered and supported. Under its commitment to standards, measurements and measurement apparatus . . . are five major research institutes devoted to research and development in the measurement and instrument sciences. Below this research level are more than 100 calibration centers geographically distributed to provide calibration services to industry, to enforce precision standards and to bring the activities of the research institutes directly to bear upon industry."

Soviet Increase

Under the latest Soviet Five-Year Plan, which began in 1956, all types of electrical, mechanical, optical, and radiation measuring instruments and related instruments for automation are scheduled to be increased by substantial amounts, averaging around 300 per cent. The number of calibration centers (which evaluate and approve all of the measuring instruments used in any Russian production plant and which make available to Russian industry the latest advances in new measurement techniques) are to be increased to 129.

Referring to a Soviet Standard and Measurements Conference held in March 1956 (two years ago), Dr. Astin says that their discussions of the problem of advancing the art of measurement so that it would

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have a direct impact on Soviet plans for automation "reveal a profound understanding and extensive effort on the relationship of precision in the automation of production processes."

Take the field of high temperature measurements — crucial in the developments of missiles, rockets, ICBMs, atomic fusion reactors and power plants and satellites.

In the U. S., says Dr. Astin, "The need is so great that technological processes must remain at a standstill, so to speak, until measurement and instrumentation problems are resolved." He says the lack of measurement techniques and devices "is proving to be one of the severest deterrents to laboratory and field experiments" and that knowledge of the behavior of materials at high temperatures is urgently needed.

"The situation is especially grave," he continues, "when considered in the light of Russia's measurement achievements in this field as described in their official journal of measurement engineering. Their national standardizing organization has claimed an ability to make regular calibration of temperature measuring devices up to 6,000 degrees (Centigrade) and their scientific plans call for increasing this calibration competence so that by 1960 they will provide this calibration service up to 12,000 degrees."

Soviet Accuracy

Some scientists at the Bureau of Standards say that the Russian launching of Sputnik III shows that the Reds have an ability to measure forces ranging from a third of a million pounds probably up to one million pounds to an accuracy approaching one per cent under field conditions. They estimate that in the U. S. we have the ability to measure forces of this size in the field only to an accuracy of from three to four per cent.

This race between the Soviet Union and the United States for better instrumentation of industry is concurrent with a Bureau of Standards decision to provide a reference service to all U. S. businessmen who may desire help.

Thus a Chicago manufacturer, industrial research man or other businessman with a problem on his hands can write to the Office of Basic

Instrumentation of the National Bureau of Standards, Washington 25, D. C., for all the information it has available on an instrument or series of instruments to solve his research and development problem. (And a great many of the problems that businessmen face these days—from corrosion and breakage to paperwork and inventory control—are problems that better instruments would help solve.) The Bureau will check its 15,000-card reference files, send the Chicago businessman a bibliography of published information on the instrument or instruments that may help solve his problem.

Although it is not part of their service, Bureau of Standards men

sometimes get so interested they send along their own suggestions as to how a manufacturer might go about solving his problems.

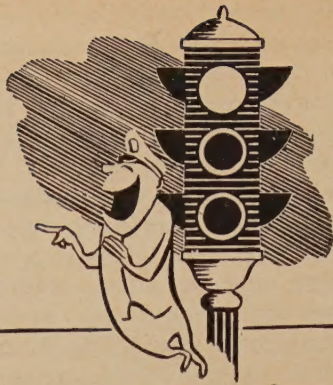
For Bureau men enjoy developing new instruments. There is even one laboratory at the Bureau whose function is to develop radical new ways of measurement . . . using techniques and instruments for which there is no known use. The idea: by breaking away from conventional ways of doing things, they may leapfrog into new and better ways of instrumentation. And, sure enough, most of these new Rube Goldberg ways of measuring develop into the forerunners of extremely useful instruments.

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The old-timer stared reflectively into space. "I don't exactly know—yet," came the reply, "but I'm dickering with two medicine companies right now."

After a visit to an old friend in the hospital, the man took the patient's lovely nurse aside and said, "Give me the real lowdown. Is he making any progress?"

"None at all," replied the nurse decisively. "He's not my type."

"And upon what income do you propose to support my daughter?"

"Five thousand a year."

"Oh, I see. Then with her private income of \$5,000 a . . ."

"I've counted that in."

A naughty little girl was put in a clothes closet for punishment. For 15 long minutes there wasn't a sound. Finally the stern but anxious mother opened the door and peered inside.

"What are you doing in there?" she asked. From the darkness came the emphatic answer, "I'm thpittin' on your new hat, I'm thpittin' on your new hat, I'm thpittin' on your new dreth, I'm thpittin' on your new thatin thlippers and-and." There was a breathless pause.

"And what?" cried the mother.

Came the voice of vengeance, "Now, I'm waitin' for more thpit!"

"Who gave the bride away?"

"Her little brother. He stood up in the middle of the ceremony and yelled 'Good work, Sis, you got him at last.'"

"Did the girls admire the engagement ring I gave you?" asked the pompous young man.

"Better than that, dear," his fiancée cooed poisonously, "two of them recognized it."

"This car will go 135 miles an hour," said the dealer.

"Yes, go on," said the buyer.

"And it will stop on a dime," said the dealer.

"Yes, go on," said the buyer, "what happens next?"

"Well," said the dealer, "a little putty knife comes out and wipes you off the windshield."

Looking over the rim of a volcanic crater, an American tourist in Europe said to another: "Wow, it sure is deep and hot. Reminds you of hell, doesn't it?"

One of the native guides, hearing the remark, shrugged his shoulders. "These Americans," he said quietly, "they've been everywhere."

At the urging of his wife, Browne went to see the president of his company for advice on achieving success. The boss gave him the old, tried, and true formula: "Get in early. Work hard on the job assigned to you. Do more than is expected of you. Don't hesitate to work overtime. Study hard." And so on.

That night his wife asked how he made out. "He said I should kill myself," Browne replied.

An affluent hoodlum went shopping for a casket fitting for a fallen pal, who had died prematurely of lead poisoning. He took along a conferee.

They were not long in locating a beautiful, chromeplated, heat-resistant, wall-to-wall job for slightly less than \$5,000. The hoodlum was enthused over the bargain until his conferee nixed the idea. "Don't be a sap," he whispered. "For an extra thousand we can bury him in a Cadillac!"

A Texan had a small farm with just a few sheep. One day his wife was dyeing some bedspreads blue and a little lamb fell into the bucket of dye. A passing motorist saw the lamb with the blue fleece and bought it for \$50. So the Texan figured he had a good thing going and colored more lambs which brought big profits.

"Pretty soon," he recalled, "I was coloring them pink, blue, yellow, green, lavender and you know, now I'm the biggest lamb dyer in Texas."

A young actor came home all excited "I've landed a part!" he told his father. "It's a new play—I have the role of a man who's been married for 25 years."

"Fine," nodded his father. "That's a start anyway. Maybe next time you'll get a speaking part."

On the first day of school, the little boy was telling his teacher about his dog.

Teacher—"What kind is it?"

Boy—"Oh, he's a mixed-up kind—sort of a cocker scandal."

Two barflies stood at the mahogany watching the approach of an old crony.

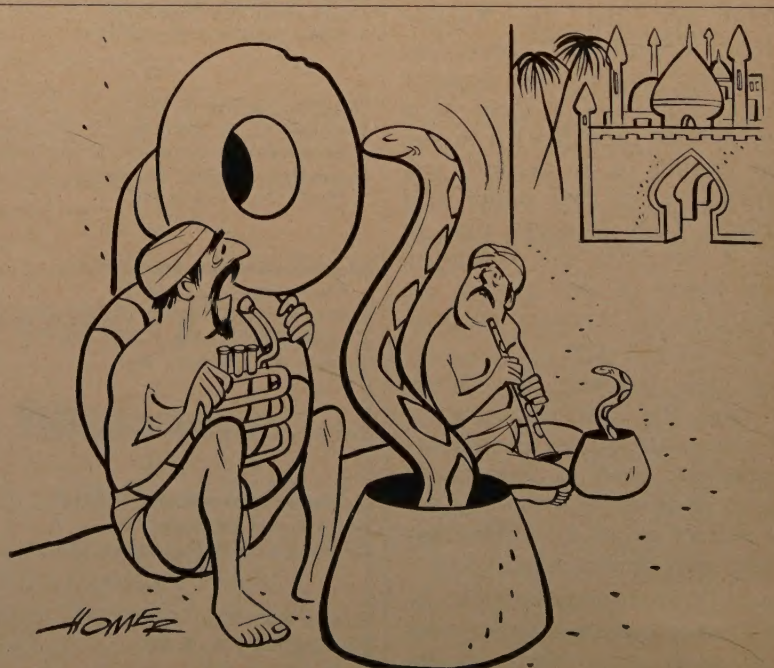
"I don't know what's happened to Jim lately," said one of them, admiringly. "He's getting quite a spring in his stagger."

"Well, how do you feel now?" one young woman asked another who had just received her divorce papers.

"Wonderful!" answered the other. "In fact, I feel like a new man!"

Someone asked him if it were true that he grew up in a tough neighborhood.

"Tough?" he answered. "Why, it was so tough in our neighborhood that a cat with a tail was a tourist!"



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